APRIL 1954

American Engineer

UNIVERSITY OF MICHIGAN
APR 15 1954
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IN THIS ISSUE . . .

● **AN EXCLUSIVE INTERVIEW**

With Donald A. Quarles

Assistant Secretary of Defense for Research and Development

A Top Engineer in Government Service, Mr. Quarles Discusses Technology and Defense

. . . *Also*

Ethics and the Professional —N. W. Dougherty's Thought-provoking Analysis—

●

A Roundup with Photos of Engineers' Week Highlights

●

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To help the offering firms determine which literature you require, when requesting an item, be sure to list all specifications shown . . . and say you saw it in the AMERICAN ENGINEER.

STEEL FORMS BULLETIN—"Blaw-Knox Steel Forms for Concrete Construction" is the title of a 50-page bulletin, No. 2430, published by Blaw-Knox Co. More than 50 photographs illustrate the wide range of application. Included in the bulletin are practical design suggestions for economical adaptation of Blaw-Knox steel forms. Copies of this bulletin may be obtained from Blaw-Knox Co., Steel Forms Dept., P. O. Box 1198, Pittsburgh 30, Pa.

—AE—

ICE BULLETINS—Franklin P. Miller & Sons, Inc., 36 Meadow St., East Orange, N. J. offers three new bulletins on Dry Ice Crushers and Ice Breakers.

—AE—

LARGE AREA PLEXIGLAS LIGHTING—Booklet Folio P-54 is now available describing a wide variety of plexiglas fluorescent lighting units. These units, the Plexlite line, have molded white plexiglas diffusers and 18 gauge cold-rolled steel chassis finished in baked white enamel of 89% reflectivity. The Folio is illustrated to display the many application possibilities of each of the units. Write: Gruber Lighting, 125 S. First St., Brooklyn 11, N. Y.

—AE—

DIAL THERMOMETER BULLETIN — A new bulletin covering its line of dial-type thermometers has been issued by the Rochester Manufacturing Co. The bulletin details the specifications and special features of the company's various types of dial thermometers for industrial and laboratory use, and of accessories, such as sockets and extension necks. Write: Rochester Manufacturing Co., Rochester 10, N. Y.

—AE—

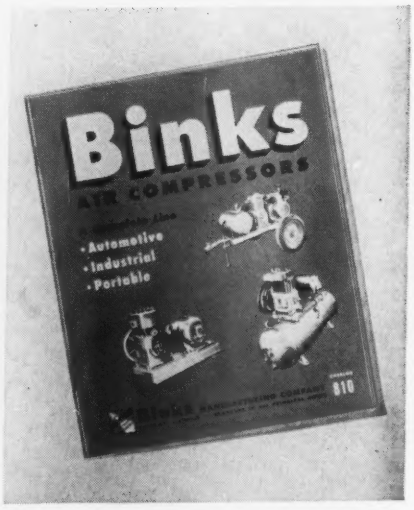
CLAY PIPE BOOKLET — The Robinson Clay Product Co. is offering an 11-page illustrated booklet R254-40 describing the uses of clay pipe and kindred clay products in masonry structures. Copies may be obtained from A. E. Williams, Sales Manager, Vitrified Products Division, The Robinson Clay Product Co., 65 W. State St., Akron 9, Ohio.

—AE—

FLEXAZONE BROCHURE — Of interest to engineers, architects, contractors, the air conditioning industry, and the building field in general, is the brochure on a new product, "Flexazone — Central Plant Air Conditioners." The D-H Flexazone unit heats, cools, ventilates, circulates, filters, humidifies and dehumidifies. It provides independent and/or variable control to each separate zone or room of an installation. There is a choice of 24 different unit arrangements. Write: Drayer-Hanson, Inc., P.O. Box 2215, Terminal Annex, Los Angeles 54, Calif.

—AE—

BERYLLIUM COPPER TOOLS FOLDER —The advantages of beryllium copper tools as a safeguard against accidental fire or explosion caused by sparks are described by the Beryllium Corp. in a new folder. It describes 31 Berylco safety tools ranging in variety from pliers and wrenches to wire brushes and nitro-cellulose forks. Copies may be had free from the Beryllium Corp., Reading, Pa.



AIR COMPRESSOR CATALOG — Just published, Binks Air Compressor Catalog No. 810, gives information on the company's line . . . a size and model for practically every air compressor need. Write: Binks Manufacturing Co., 3122 Carroll Ave., Chicago 12, Ill.

—AE—

PECO VALVES FOLDER — A new folder outlines the purpose of the Peco Automatic Hydraulic Sewer Valve. It is a hydraulically operated gate valve designed to automatically prevent basement flooding through plumbing fixtures by sewage backup during heavy rain storms or other unusual conditions. The Peco shuts off the sanitary sewer automatically as soon as sewage starts backing up. Write: Protection Equipment Co., 9 Main St., N.E., P.O. Box 845, Minneapolis, Minn.

—AE—

GILSULATE INSULATION MANUAL—A new 20-page Technical Data Manual, published by American Gilsonite Company, gives engineers all available information on the application of GILSULATE, a new insulation for hot underground pipes.

Numerous charts, tables, drawings and graphs are used throughout the manual to simplify and clarify discussion of the engineer's calculations. Write: American Gilsonite Company, 134 West Broadway, Salt Lake City, Utah.

—AE—

BUSINESS TELEPHONE SYSTEMS—A brochure "The P-A-X Code Call Service," tells how executives and key employes can be quickly reached anywhere in the plant or office by means of a special signaling device. Copies from Automatic Electric Co., 1033 W. Van Buren St., Chicago 7, Ill.

—AE—

MOBILE GENERATOR—In a new pocket-size format is the latest issue of Power Points Digest, company publication of D. W. Onan & Sons, Inc., Minneapolis, Minn. This 16-page edition describes various standby and mobile applications of the new Model "CW" electric generating plant. How this versatile generating unit protects homes and office buildings from the effects of commercial power failures is told in the booklet. Ask for Power Points Digest, Vol. 10, No. 1.

MATERIALS HANDLING — A Job study made at the Chicago American Airlines terminal and just released by Towmotor Corporation details a completely new, speedy, space-saving freight handling technique made possible by using modern fork lift trucks. Request: Job Study No. 132 from Towmotor Corporation, 1226 East 152nd St., Cleveland 10, Ohio.

—AE—

GRADALL SERVICE MANUAL — A fact filled, illustrated manual devoted to the maintenance, servicing and repair of its mobile, multi-purpose earthmoving and construction machine has been issued by the Gradall Division of the Warner & Swasey Co. Revised and enlarged, this 28-page quick reference guide to Gradall maintenance incorporates up-to-the minute service recommendations and suggestions covering the company's improved Model M-2460. Write: Warner & Swasey Co., 5701 Carnegie Ave., Cleveland, Ohio.

—AE—

AIR CONDITIONER BROCHURE — Bulletin No. 122, dealing with precise control of air temperature and moisture with Niagara Type "A" air conditioner, is just off the press. The Bulletin explains how to get the air conditioning result that will protect the quality and uniformity of your material or process or give you the precise condition you need in conducting tests. Write: Niagara Blower Co., Dept AE, 405 Lexington Ave., New York 17, N. Y.

—AE—

RE: SUMP PUMPS—Construction details, head and capacity tables, dimensions and other data are the subject matter in Bulletin 1029 titled "Johnston Unit-Line Sump Pumps." The Unit-Line Sump Pump is a pre-engineered packaged line from which a pump can be selected for existing conditions or for new construction. Write: Johnston Pump Co., 3272 E. Foothill Blvd., Pasadena 19, Calif.

—AE—

HANDBOOK ON PRECISION BARREL FINISHING—Lord Chemical Corporation has issued a 32-page handbook and catalog on "Lorco" compounds.

A "rapid application index" serves to give the reader a quick reference to the particular standard and special purpose compounds recommended for various applications. A series of 24 unretouched "before and after" photographs show the results accomplished by "Lorco" compounds in cutting down, coloring, burnishing, descaling, and finishing typical machine and equipment parts. Write: Lord Chemical Corporation, 2068 S. Queen St., York 9, Pa.

—AE—

CREEP TESTING MACHINES LITERATURE — Five types of creep testing machines for standard sized metal specimens are presented by Baldwin-Lima-Hamilton Corp. in the 12 page Bulletin No. 4208. It describes the lever arm and screw type creep machines. Microformer type and new SR-4 type automatic relaxation machines and a constant strain rate machine. More details from the Baldwin-Lima-Hamilton Corp., Philadelphia 42, Pa.

Letters

Shortage? . . .

Dear Editor:

The writer has heard several young engineers discussing the "shortage of engineers" lately and thinks that the attitude of these young men may be typical and worthy of serious consideration. Most of the youngsters heard to express themselves are becoming distrustful of the Professional Engineering Societies' motives in our continual harping on the subject of a "shortage of engineers." They suspect that the efforts to induce more boys to study engineering are made in behalf of the employers of engineers in order to insure a plentiful supply at continued relatively low salaries, rather than in the interest of the average employed engineer, who frequently receives less pay than non-professional fellow employees, according to some reports.

Because of this distrust of the Society's motives, many of our young EIT members are deserting the Society and are discouraging other newer graduates from registering and from joining the Society. They apparently feel that the Society's policies are now made by and for the relatively few members who are the owners of engineering firms and, as such, employ other engineers to do the detail work for their projects.

If our organization is to be truly democratic and representative, we must try to include and work in behalf of the entire profession, without excluding the interests of any group of potential members. Recent surveys indicate that the majority of the graduates in engineering are employed in industry, but the writer is of the opinion that our registration of engineers and enlistment in the Society is weakest in that largest portion of the eligible field.

This large group is also a fertile area for the organizational activities of the labor unions, who will be quick to capitalize on any real or apparent failure of the professional groups to give proper attention to the social and economic welfare of these employed engineers.

The writer feels that the interests and opinions of these young engineering graduates are of utmost importance to the future of the profession, and that the established members of the profession should make every effort to learn their opinions and to give them careful consideration at local, state, and national levels. Appropriate action in their behalf must follow this study if the trend away from professionalism is to be reversed.

WALKER JONES, P.E.,
Borger, Tex.

On Housing . . .

Dear Editor:

The government is today giving mortgage loan guarantees without receiving any consideration in return. It is now the opportune moment to see that new housing legislation contains specific consideration for

(*Continued on page* 5)

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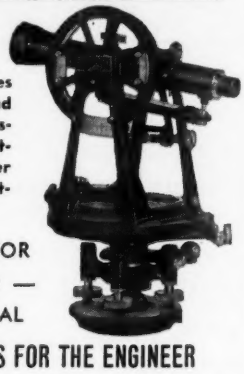

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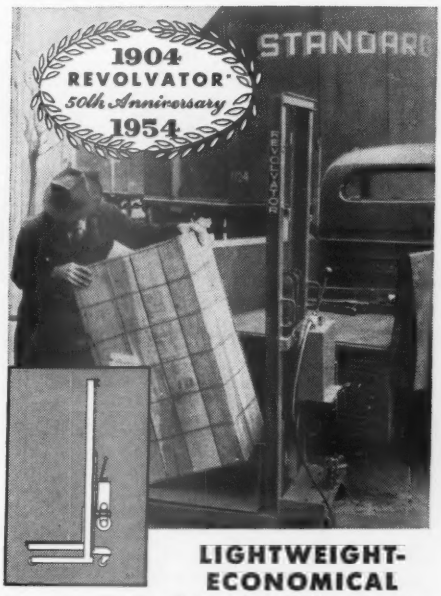

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• SPECIAL ARTICLES

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Dean Dougherty traces the ethical concepts of the learned professions to their roots in antiquity.

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NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS FOUNDED 1934

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It is also recommended that only licensed professional engineers be employed by F.H.A. and the V.A. as compliance inspectors. And in every case where a superior officer approves a home disapproved by the inspector, a public hearing "must" be held to see if gratuities played any part in the superior officer's decision.

Our duty is to protect our Government and also the buyer—not the builders.

HENRY H. BOECKMANN, P.E.,
Huntington, N. Y.

N.S.P.E. Objectives . . .

Dear Editor:

The letter from H. H. White published in your March issue of the AMERICAN ENGINEER, page 5, saddened me because it indicated that some of the important objectives for which N.S.P.E. was founded are unknown by the present generation of members. Your correspondent questioned my statement, "It is one of the objectives of N.S.P.E. to see that engineers are given credit for their work." I am therefore taking this opportunity to record the fact that this was specifically one of the worthy objectives for which N.S.P.E. was founded.

At the organization meeting of N.S.P.E. in 1934, I read a list of twelve objectives for N.S.P.E. This list was unanimously adopted and ordered printed. No. 4 in this list of objectives reads:

"To conduct a campaign to secure public credit and recognition for engineers in connection with their works."

This was printed in the *Blue Book*, of which thousands of copies were printed and used in the campaign of building up the newly formed N.S.P.E.

In an article on "Professional Recognition," the second of a series of articles by me on "What Is Wrong with the Engineering Profession" published in The

(*Continued on page* 38)

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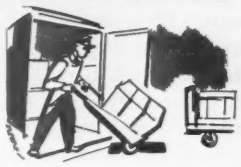

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Professional News in Capsule Form

Charles H. Scholer Heads American Concrete Institute • Associated General Contractors Make Construction Predictions • Mining Industry Needs More Engineers, Says Reinartz • New Engineering Scholarships Established • Other Items of Interest

Charles H. Scholer, head of the Department of Applied Mechanics, Kansas State College, and a prominent member of the Kansas SPE and NSPE, has been elected president of the American Concrete Institute for 1954.

A graduate of Kansas State College, Professor Scholer has worked on many engineering assignments with the U. S. General Land Office in New Mexico, the Atchison, Topeka, and Santa Fe Railroad, the Kansas State Highway Commission, and the Portland Cement Association. He began his teaching career at Kansas State College in 1919. And he is also well-known as the author of technical papers relating to concrete.

* * *

A heavy spurt in highway construction, a more moderate gain in building construction, and a dip in heavy engineering projects are due in the next six months according to a nationwide survey conducted by The Associated General Contractors of America. In addition, it is expected that the construction picture will be dominated by ever-deepening competition even though the over-all volume of construction expands. The results of the A.G.C. survey were made public during the association's 35th annual convention held in Los Angeles in March.

During the convention John MacLeod, president of the Macco Corporation of Paramount, Cal., a well-known construction firm, was installed as president of the Associated General Contractors for 1954. George C. Koss, president of the Koss Construction Co., Des Moines, Iowa, was elected vice president.

* * *

One of the most urgent jobs facing the mining industry today is that of attracting more young men into careers in mining engineering, metallurgy, and geology, according to Leo F. Reinartz, new president of the American Institute of Mining and Metallurgical Engineers.

The number of graduates in the mining field next June will be the smallest in many years, Mr. Reinartz pointed out during the Institute's recent annual meeting at New York's Hotel Statler. "Unless we can somehow change this trend," he continued, "the shortage of specialists will become a matter of serious national concern within a few years because of the growing importance of metals and minerals to industry and to the national defense."

The AIMME official, who is vice president of the Armco Steel Corporation in charge of mines, quarries, and special operating development, said that the Institute this year planned to stress a program aimed at making students aware of the increasing opportunities in the mining and metallurgical fields.

* * *

Two four-year engineering scholarships — one at the Massachusetts Institute of Technology and one at Stanford University — have been opened to young men from Southern California by the Los Angeles engineer-constructor firm of Holmes & Narver, Inc. Announcement of the $18,000 program was made by James T. Holmes, president of the firm, and D. Lee Narver, executive vice president. The two scholarship donors are alumni of M.I.T. and Stanford respectively.

* * *

The Atlas Powder Company, of Wilmington, Del., has set up eight $1,000 college scholarships as part of the company's program to enable outstanding students to complete their scientific education to help meet industry's need for technical personnel, according to word from Ralph K. Gottshall, president.

The awards will go to students who will be seniors during the 1954-55 college year and who are majoring in chemistry, physics, or any branch of engineering. The program, initially being proposed to 40 colleges and universities, will be administered by the Atlas committee on scholarships under the chairmanship of Dr. Thomas Kennedy, the company's director of industrial relations. No employment commitment will be entailed either on the part of the company or the students.

* * *

C. Read Granberry, University of Texas professor of electrical engineering and a distinguished member of the Travis Chapter, Texas SPE, has resigned to accept an appointment as

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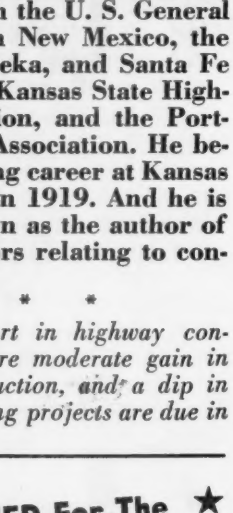

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From 1946 until his resignation, Professor Granberry was in administrative charge of The University of Texas Balcones Research Center directing research for Texas industries and the Federal Government, including the armed forces. For many years he also served as assistant to the president of the University and later as assistant to the chancellor. In the latter position he supervised the University's public relations activities.

No stranger to governmental service, he has also been parliamentarian for the Texas House of Representatives during the terms of fourteen State Legislatures; and from 1945 to 1953 he was chairman of the Governor's Advisory Committee on Veterans' Education.

* * *

The Architectural League of New York has presented its 1954 award in engineering to Thomas C. Kavanaugh of New York for his design of the Rio Blanco Bridge near Veracruz, Mexico.

* * *

The Connecticut General Life Insurance Company has found through a recent survey of 143 companies that 77 will be offering the same salary in 1954 as in 1953 for engineering graduates, while 62 will be offering higher salaries. Eight per cent of the companies quoted a starting salary figure between $301 and $325 per month, 36 per cent between $326 and $350, and 44 per cent between $351 and $375.

Of the same companies, 30 per cent reported they would want more graduates in 1954 than in 1953, while 24 per cent wanted fewer and 52 per cent wanted approximately the same number.

* * *

Dr. J. E. Morton, professor of statistics at Cornell University, has taken leave of absence to serve as consultant on industrial research to the National Science Foundation. His principal duties with the Foundation in the Office of Program Analysis will be to plan and direct a survey of scientific research undertaken by American industry. The industrial research study is part of a broad survey of scientific activities in the United States by which the NSF seeks to gather facts on the current status and needs of science.

* * *

Recent appointments at the National Bureau of Standards include those of Irvin H. Fullmer as chief of the

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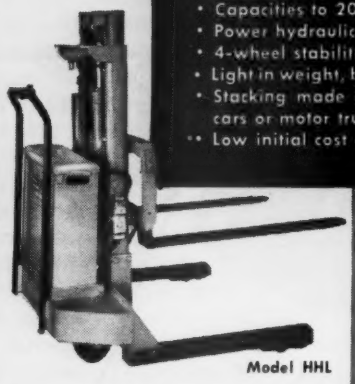

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The Hydrolift

fulfills the demand for an all-purpose hand truck in the average plant. It can be used for handling pallets, skids, dies, drums, barrels, sacked goods, and for numerous other non-routine jobs.

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Engineering Meteorology Section, Edward C. Lloyd as chief of the Mechanical Instruments Section, and Dr. Robert D. Huntoon as associate director for Physics. Dr. Huntoon has also been designated acting chief of the NBS Electronics Division and of the Bureau's Central Radio Propagation Laboratory.

* * *

The executive committee of the National Constructors Association includes T. C. Williams of the Stone & Webster Engineering Corporation, Boston, a member of the Massachusetts SPE.

The association is composed of leading national firms engaged in the engineering and construction of power and chemical plants, steel mills and petroleum refineries. John F. O'Connell, vice president of the Bechtel Corporation, San Francisco and New York, has recently been elected president of the organization.

* * *

The National Rivers and Harbors Congress will this year resume its national conventions, which were suspended during the "shooting war" in Korea, according to an announcement by Representative Overton Brooks of Louisiana, national vice president and director of the organization.

The agenda of the 1954 convention, which will be held at the Mayflower Hotel in Washington, D. C., May 25-26, will cover such topics as flood control, the maintenance of important harbors and river channels, the merchant marine, natural resources conservation, and public works. The convention itself will be preceded by two days of committee meetings. Governors of the 48 states, the territories and insular possessions have been asked to name delegates to the meeting.

* * *

The Army's 79th Engineer Construction Battalion has been cited by Secretary of the Army Robert T. Stevens for meritorious conduct in the performance of outstanding combat services during military operations in Korea from October 1, 1952, to October 31, 1953.

The unit citation pointed out in part that: "Charged with the mission of providing general engineer support to the Eighth United States Army, the battalion successfully completed many major projects, including the construction of the Eighth Army Headquarters in Yongsan. . . .

"The 79th Engineer Construction Battalion displayed such outstanding devotion to duty in the performance of exceptionally difficult tasks as to set it apart from and above other units with similar missions. The initiative, technical ability, and esprit de corps exhibited by members of this battalion reflect great credit on themselves and the military service."

* * *

The American Concrete Institute's Wason Medal for "noteworthy research" has recently been presented to J. Neils Thompson and Phil M. Ferguson for their co-authored paper on "Diagonal Tension in T-Beams Without Stirrups," which appeared in the March, 1953, ACI Journal. Both men are on the engineering staff of the University of Texas in Austin, and Professor Thompson is a prominent member of the Texas Society of Professional Engineers.

* * *

Admiral Edward L. Cochrane, dean of the School of Engineering at the Massachusetts Institute of Technology since 1952, has been appointed vice president for Industrial and Governmental Relations, effective April 1, according to an announcement by Dr. James R. Killian, Jr., M.I.T. president. Dr. C. Richard Soderberg, who has been head of the Department of Mechanical Engineering since 1947, succeeds Admiral Cochrane in the post of dean of Engineering.

* * *

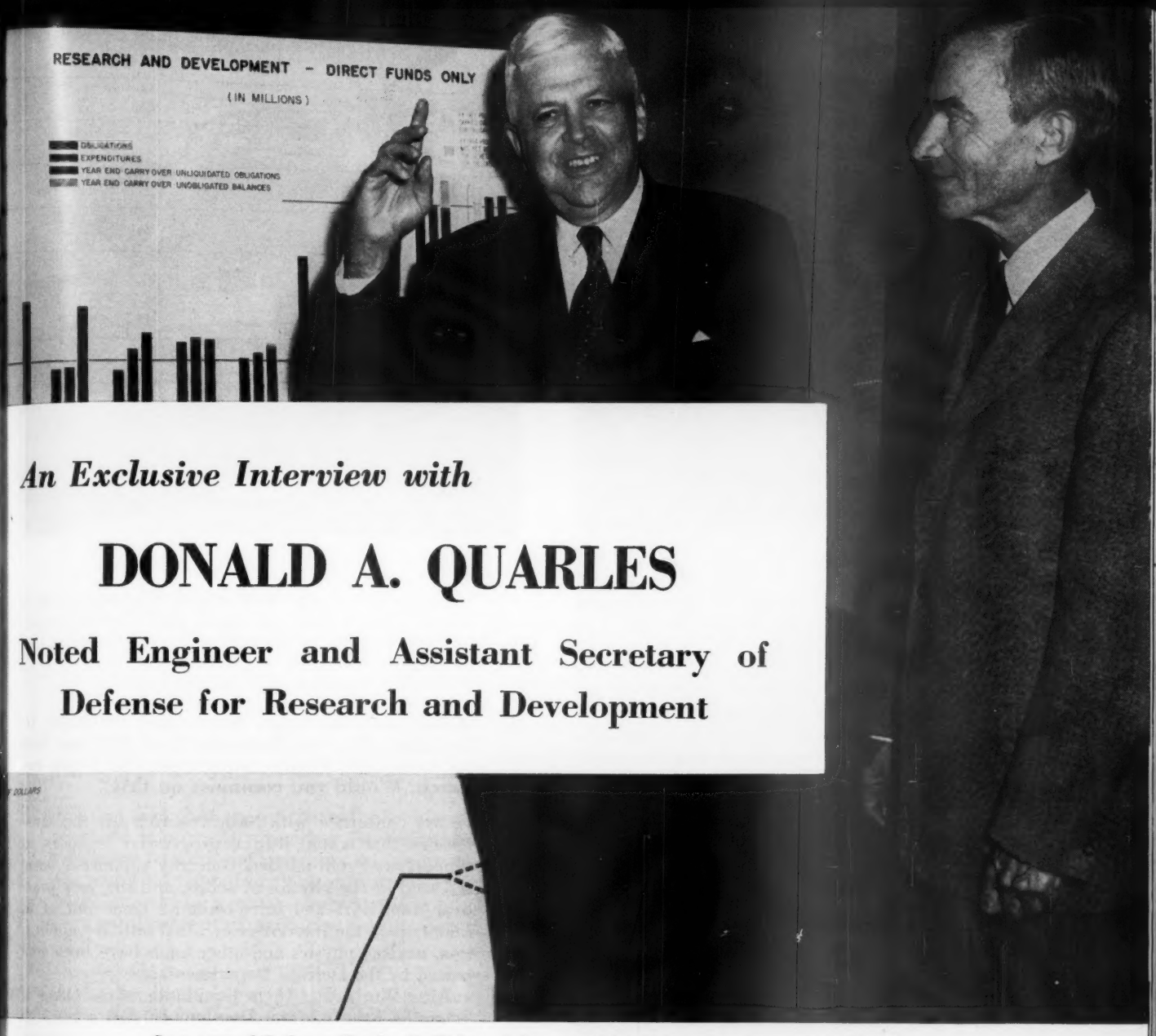
Among the special courses featured in the Massachusetts Institute of Technology's summer schedule will be one devoted to the study of Creative Engineering, with case studies and histories drawn from the area of Product Design. Professor John E. Arnold, director of the Creative Engineering Laboratory in the Department of Mechanial Engineering, will be in charge of the course, which will run from June 21 through July 2.

* * *

"Creative Thinking and Techniques" will be the theme of the ninth annual Industrial Engineering Conference to be held in New York City, April 29-30, at the Statler Hotel. Co-sponsored by the Society for the Advancement of Management and the American Society of Mechanical Engineers, the meeting will feature the presentation of nineteen papers covering such subjects as quality control, reducing production costs, better materials handling, cost savings through wage incentives, and the newest advances in "automation."

* * *

The U. S. Naval Engineering Experiment Station, Annapolis, Md., has inaugurated a new course in writing and editing technical reports for the supervisors and upper-grade engineers of the Station's several laboratories. The course has been introduced because administrative officials feel that if the top engineers and supervisors are given instruction in standards of technical writing and editing techniques, they in turn can do much to improve the writing of their subordinates.



An Exclusive Interview with

DONALD A. QUARLES

Noted Engineer and Assistant Secretary of Defense for Research and Development

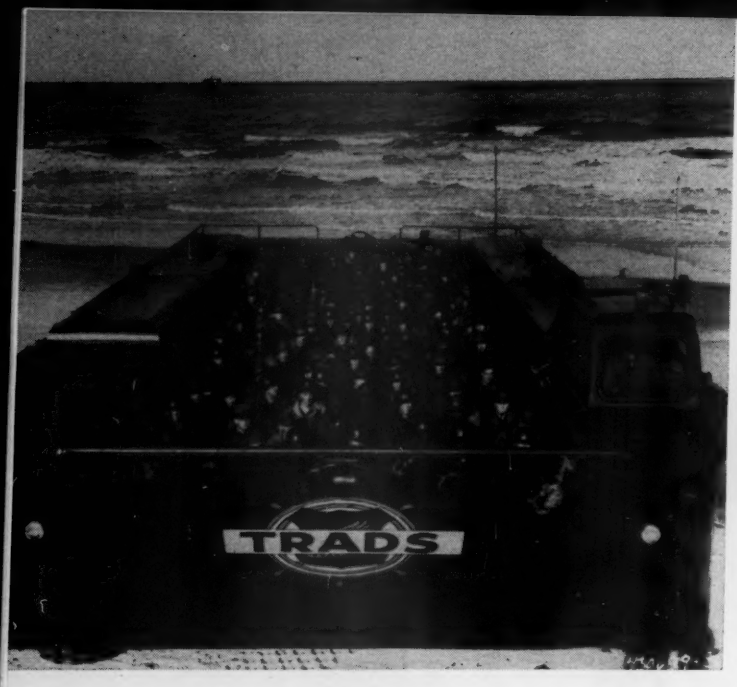
Secretary of Defense Charles E. Wilson, left, and Assistant Secretary Donald A. Quarles.

Is Technology our First Line of Defense? How Does It Fit into Defense Department Planning?—At the Request of the AMERICAN ENGINEER, Assistant Secretary of Defense Donald A. Quarles Has Provided the Answers to Some Very Pertinent Questions on This Vital Subject. The Comments of This Outstanding Engineer on Technology and the Strength of America Deserve the Thoughtful Attention of All Citizens.

Q: **We are all aware that defense today is to a great extent dependent upon technological progress. Would you care to comment briefly upon the importance of engineering and other scientific advances in shaping the present defense program?**

A: Technology is, of course, the basis of our defense. We count on the technological superiority of our weapons over those of the Communist world to offset a heavy numerical disadvantage. The whole research and development program is our effort to capitalize on engineering and scientific advance.

Q: **Has technology been a major factor in cutting defense expenditures? And if so, do you expect that such a trend will continue?**



A: The answer to both questions is yes, but it needs qualification. Technology is a major factor in cutting the cost of a given level of defense, or of achieving a higher level of defense at a relatively lower cost. As a field of technology is more intensively developed, however, the equipments become more complex; the development costs necessary to produce a significant improvement rise, and the costs of resulting equipments are greater. A modern military aircraft is an order of magnitude more expensive than its World War II ancestor, but the latter would be completely inadequate under modern conditions.

***Q:* What are the responsibilities of the Assistant Secretary of Defense for Research and Development?**

A: The Assistant Secretary for R&D is responsible, under the Secretary of Defense, for reviewing the departmental research and development programs to see that they are well coordinated, and that, collectively, they constitute a sound and integrated over-all Defense Department program, consistent with budgetary limitations. He develops policies and establishes procedures to insure the effective conduct of research and development by the Military Departments.

***Q:* What is the demarcation between the Assistant Secretaries for R&D and for Applications Engineering?**

A: Applications Engineering covers the field between research and development on the one hand, and quantity production on the other. It pertains to such matters as the suitability of new items: their reliability, simplicity, and economy of production; engineering policy and standardization problems. In those fields in which the art is well established, or follows civil design, Research and Development is limited to exploratory work through the research and bread-board model stages; and cognizance passes to Applications Engineering when final design work can be undertaken. In instances in which advanced technology or new art is involved, the R & D extends through final design and includes laboratory and engineering field tests of prototypes, as well as systems analysis and evaluation incidental to development.

The delineation of Applications Engineering as a separate field is a concept which should be very fruitful in increasing the effectiveness of the Defense Department.

***Q:* In the past, there has been some criticism to the effect that the Department of Defense has not been sufficiently concerned with basic research. Would you comment on this?**

A: We are concerned with basic research for the same reasons that would lead a progressive industry to support it. Profit-minded concerns supported basic research in the physics of solids, and the very practical transistors and ferro-ceramics came out of it. Likewise, in the interest of eventual military application, nuclear physics and other fields have been supported by the Defense Department.

After World War II the liquidation of the Office of Scientific Research and Development left a research vacuum and, in the next five years, military agencies, such as the Office of Naval Research, financed a considerable part of the Federal support of basic research. In creating the National Science Foundation in 1950, it was the expressed intent of the Congress that the Foundation take over the support of basic research for the general purpose of strengthening national science. Appropriations to the Foundation were so small during the Korean hostilities that only a partial readjustment was possible. The Department of Defense is now planning, however, to phase out the support of general-purpose basic research, leaving this function to the National Science Foundation. The Defense Department expects to continue the support of such basic research as is closely relevant to its missions, at such level as seems wise in relation to other demands for the Research and Development dollar.

***Q:* To what extent does the Department of Defense directly sponsor scientific research today? And by whom is this research carried out?**

A: There is an indefiniteness about dollar figures here due to the hazy boundaries between areas such as "basic research," "exploratory research," and "supporting research." About $20,000,000 will be expended for "basic research" in 1954; more or less might be

so classified if different definitions are followed. About four-fifths of the basic research supported by the Department of Defense is performed within the laboratories of the nation's universities and other non-profit institutions.

Q: **What provision, if any, is made to take advantage of the technological advances made by engineers and scientists working outside the purview of the Defense Department and to coordinate defense technological planning with the latest civilian developments?**

A: In this respect, we want to be certain that our military program has the broadest possible scientific and technological base that the country can produce. We do this primarily through our contracts with industrial laboratories and the universities, which utilize about 70% of our funds each year. Thus the latest techniques developed by civilian industry are applied to current military projects. In addition, many contracts specifically utilize the independent, creative thinking of civilian scientists and engineers in exploratory studies and in work based on such studies. In guided missiles, in air defense, in transonic aircraft, much of the original thinking has come from outside the Department. We also encourage the use of civilian experts in the planning and review phases of our research and development programs. Thus, in support of my office, there are technical advisory panels of outstanding scientists and engineers in the dozen or so areas of technology. Similar groups can be found advising the military services at various levels.

Q: **Do you feel that the engineering profession as a whole is currently making its optimum contribution to national progress and security? Or do you feel that there are any areas in which there should be greater concentration of effort or a realignment of activities for the benefit of all?**

A: Human things are never optimum. The engineering profession is making a very great contribution. The utilization of engineers, particularly the younger engineers, could be improved. The USSR will soon outdistance us in the number of engineers. We must strive for higher quality and better utilization.

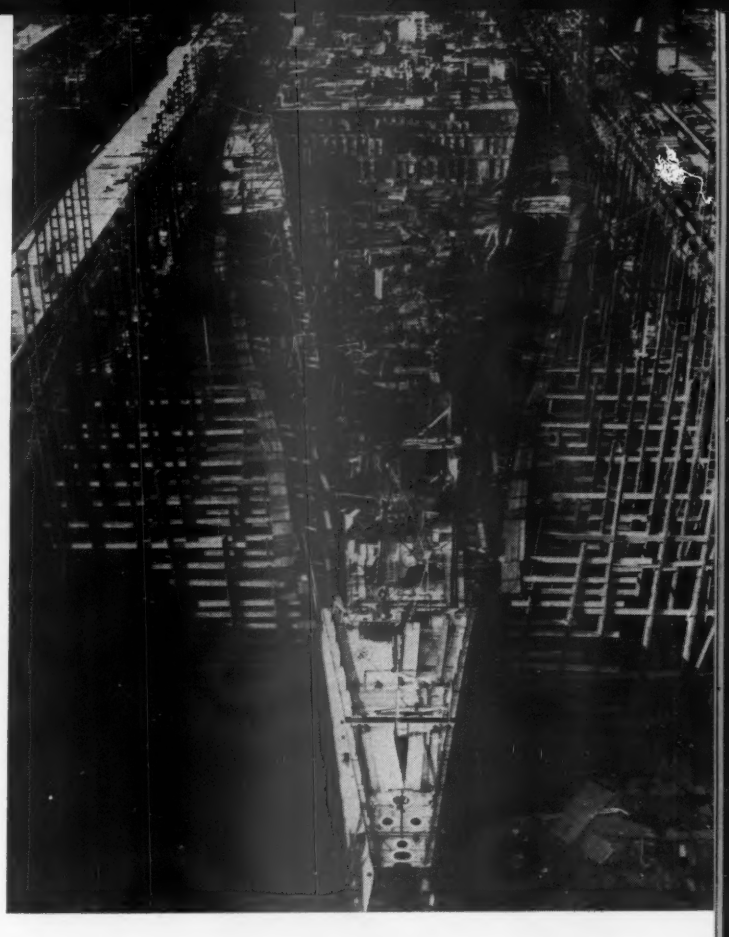
Q: **There are a number of persons who claim that we have become too concerned with technology and that many of our basic ideals are being sacrificed in favor of materialism and mechanization. Would you care to comment upon this attitude?**

A: Materialism and mechanization as applied to the comforts and conveniences of life are matters of choice—perhaps we overdo them. As applied to defense, we have no choice. Our survival as a nation that can cherish such basic ideals is at stake.

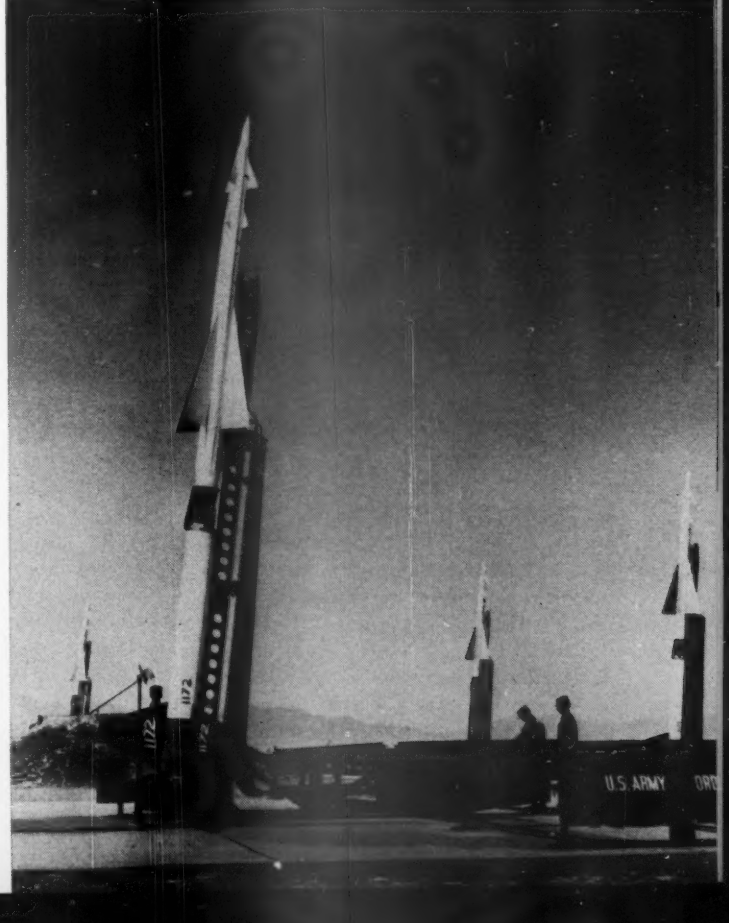
Q: **Would you care to make a prediction as to the future of the engineering profession, particularly in its basic relationship to the preservation of a strong and independent United States?**

A: As our technology gets more and more complex I have no doubt that the engineering profession must play an even larger and more vital part in preserving a strong and independent United States.—***End.***

(See page 12 for biography of Mr. Quarles)

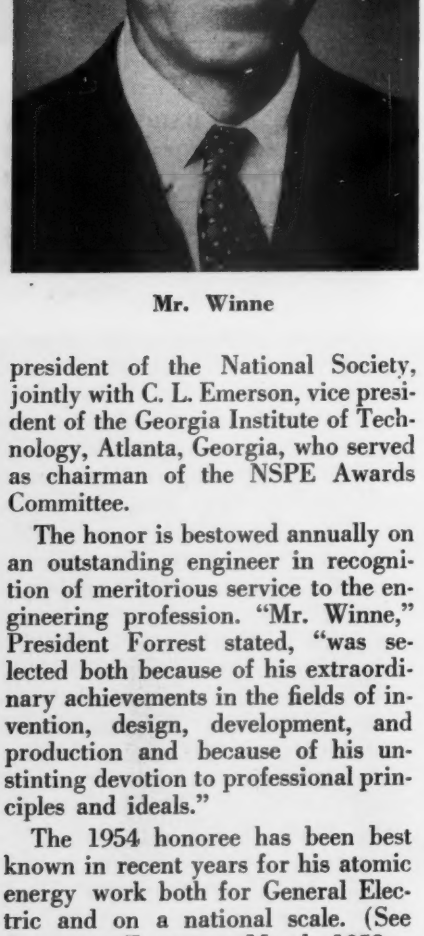


On Opposite Page: Left: This giant BARC is primarily designed for the transportation of heavy equipment such as tanks. Right: The Marine Corps' new assault transport helicopter. On This Page: Above: The giant hull of the carrier USS Forrestal. Below: Nike guided missiles ready to go.



Harry A. Winne Selected to Receive NSPE Award for 1954

Harry A. Winne, nationally known electrical engineer who has recently retired as vice president of the General Electric Company, Schenectady, New York, has been chosen as the recipient of the National Society of Professional Engineers' 1954 Award. Announcement of Mr. Winne's selection was made by T. Carr Forrest, Jr.,



Mr. Winne

president of the National Society, jointly with C. L. Emerson, vice president of the Georgia Institute of Technology, Atlanta, Georgia, who served as chairman of the NSPE Awards Committee.

The honor is bestowed annually on an outstanding engineer in recognition of meritorious service to the engineering profession. "Mr. Winne," President Forrest stated, "was selected both because of his extraordinary achievements in the fields of invention, design, development, and production and because of his unstinting devotion to professional principles and ideals."

The 1954 honoree has been best known in recent years for his atomic energy work both for General Electric and on a national scale. (See AMERICAN ENGINEER, March, 1953—"A Doctrine for Engineers: Think Big, Plan Big" by Harry A. Winne.) A graduate of Syracuse University, he joined General Electric as a student engineer on the test course in 1910 and advanced through various technical and administrative posts to the vice presidency in 1941.

During the war, Mr. Winne was in charge of design engineering for the Apparatus Department where the automatic pilot, the turbosupercharger, central gunnery control for the B-29 Superfortress, aircraft jet engines, and other important products were developed.

In 1945 he joined the immediate staff of Charles E. Wilson as vice president in charge of engineering policy for the entire company, and later the General Electric General Engineering Laboratory at Schenectady and the Nucleonics Department were added to his specific responsibilities. Most recently, prior to his retirement, he has handled special assignments for the company.

He is a member of NSPE, the New York State Society of Professional Engineers and the Newcomen Society; and he is a fellow of the American Institute of Electrical Engineers and the American Society of Mechanical Engineers.

His home is in Rexford, New York, near Schenectady.

The NSPE Award, the latest in a long series of honors which Mr. Winne has been accorded, will be presented to him at the Society's annual banquet, which will be held in Milwaukee, Wisconsin, June 12th, at the Schroeder Hotel. The banquet will climax the four-day annual meeting of the National Society which is scheduled for June 9-12.

Death Claims Former Board Members

Two former members of the NSPE board have passed away in recent weeks. They are John J. Paine of Pittsburgh, Pa., and Herman F. Lame of Rochester, N. Y.

NSPE members who attended the State Presidents' Conference, March 19 and 20 in Pittsburgh, were shocked to learn of Mr. Paine's sudden passing as he had been in attendance at the meeting. A graduate of Ohio State University, he was the chief engineer of the Bureau of Tests of the city's Department of Public Works, with which he had been employed for 32 years. He was an active member of several technical and scientific societies in addition to NSPE and the Pennsylvania Society.

Mr. Lame, who died in Albany where he formerly resided, was a retired chief engineer of the United States Maritime Commission. Following his retirement from the commission, he had operated a consulting office in Rochester until ill health forced him to discontinue practice. He had attended both the Massachusetts Institute of Technology and Columbia University.

Both men are survived by their wives and other close relatives.

CORRECTION — The *American Engineer* regrets the error in the caption for the District of Columbia Engineers' Week picture on page 27 of the March issue. The District Commissioner appearing in the photo was Mr. Samuel Spencer, not Mr. Renah F. Camalier as the caption stated.

Quarles is Well-Known Engineer

Mr. Quarles

The subject of the interview in this issue, Donald Aubrey Quarles, who took the oath of office as Assistant Secretary of Defense (for Research and Development) on August 3, 1953, is a native of Van Buren, Arkansas, and a graduate of Yale University. He has also done graduate work at Columbia University.

After having served as a captain with the Field Artillery during World War I, Mr. Quarles joined the engineering staff of Bell Telephone Laboratories (formerly Engineering Department, Western Electric Co.). From 1948 to 1952 he was vice president of the Bell Laboratories, and in 1952 he also served as vice president of the Western Electric Company. He was president of Sandia Corporation, Albuquerque, New Mexico, from 1952 until the time of his nomination to the Defense Department post.

Mr. Quarles is a fellow and past president of the American Institute of Electrical Engineers and a member of other scientific and engineering organizations as well as of Phi Beta Kappa.

A Study in Human Conduct . . .

ETHICS AND THE PROFESSIONAL

By N. W. Dougherty, Vice President, NSPE,
and Dean of Engineering, University of Tennessee

THE word *professional* has many meanings. In athletics we contrast the professional with the amateur and the meaning varies with wrestling, baseball and golf. Professional may mean your college football team, while amateur always means mine.

Our effort will be to discuss the learned professions and to show that the distinguishing characteristics of the practitioners are based on ethical concepts which are very old. By learned we mean the ancient professions of law, medicine and ministry, to which we will add, for our purposes, teaching and engineering. Certain characteristics are common to all professions which set them apart from the laborer, the artisan or the mechanic.

For the Profession:[1]

1. **It must satisfy an indispensable social need.**
2. **Its work must require the exercise of discretion and judgment.**
3. **It is conducted on a high intellectual plane.**
4. **It must have group consciousness.**
5. **It should have legal status.**

Practitioners:

1. **They must have a service motive.**
2. **They must occupy a relation of confidence.**
3. **They must carry their part in the advancement of knowledge.**
4. **They must live by a code of ETHICAL conduct.**

It is of this last item that I wish to speak because it is the motive power behind the others. It makes the difference between an angel and a savage. Before talking about professionalism and ethics, let us get a picture of the educated man:[2]

"At the close of the fifteenth century, it was said, whatever is artistic, finished, learned and wise was called Erasmain.

"It is difficult to speak of Erasmus except in terms of the superlative. The most broadly educated man of his times, he was not only the representative scholar of his generation; he remains an example to us of all the truly civilized man. His polished wit, his humility, his gentle irony, his unfailing reasonableness, his ability to see through cant and superstition, his philosophic calm in the midst of intense partisan strife, his good taste and sense of proportion: these qualities of mind belong to no one age, they are the constants of all ages; they are the essentials of a civilized attitude toward life in any age. *'Without them man is a barbarian'.*"

Professionals are the torch bearers of every generation. In the days of chivalry they used the words *noblesse oblige* to mean that high birth demanded noble living. Today, to be a professional requires high ethical concepts, even in a world of machines, production and competition. The professional must act for his client and the public at large as if he were taking actions in his own behalf. As we review our history we give honor to the circuit rider, the frontier judge and the country physician because they brought hope, obedience to law, and health to the early settlers. Theirs was a ministry of service; they were the torchbearers of a growing nation. Engineers were not far in their wake as they built highways, railways, communication lines, factories and cities. They developed the machines which took the burdens from the backs of men and animals and placed them on concrete and steel, which in turn drove slavery from the realm.

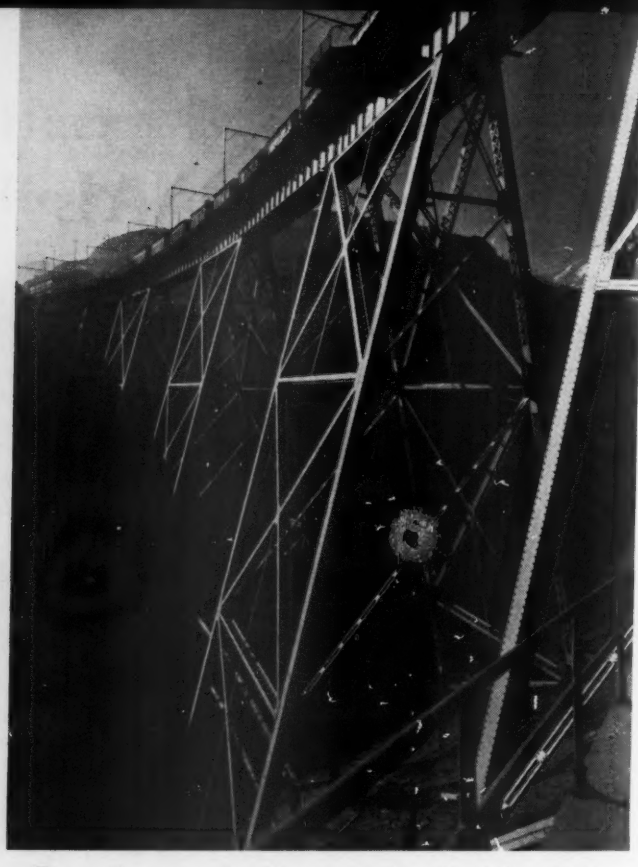
The service motive, the relation of confidence, the sharing of knowledge, and voluntary group understandings are based on more than the law; they are based on the application of the "Golden Rule." To get the background of our codes of ethics, let us take a brief look at the development of ethical concepts.

RULES of ethics are as old as records of human conduct; they antedate the writing of the law: they are the rules by which the law was written. Relations of members of the tribe to each other and to the tribe, the relation of individuals to the gods and to strangers within the gates were fixed by custom a long time before Hammurabi, Moses, Solon, or Lycurgus prepared their legal codes. We are, therefore, dealing with abiding concepts which reflect the leaven of the development of human thinking over the centuries.

The engineer must have due regard for the life and health of the public. Above: A great engineering development is this moving rubber sidewalk which was perfected for the convenience of the public.

[1] Report of Committee on Professional Recognition, Annual Report, 1945.

[2] *The Meaning of a Liberal Education*, Everett Dean Martin.



The author says that for an engineering job well done there is usually enough credit to go around.

"But mercy is above this sceptered sway,
It is enthroned in the hearts of kings,
It is an attribute to God himself;
And earthly power doth then show likest God's
When mercy seasons justice."

The Merchant of Venice

Over and above the requirements of the law are the obligations of the good neighbor, the helpful colleague and the practicing professional. In the ancient civilizations of Egypt and Chaldea the relation of father and son, mother and child and husband and wife were attributed to the gods, and similar relations existed among the worshippers. If the interests of the gods were loving, and kindly and respectful, then the children of the gods should do no less among themselves. They should respect rights; they should love each other; they should be kind to strangers. Hospitality became an obligation of all the children of the most high. An expansion of the concepts of hospitality and the good neighbor will include the rules of conduct set forth in codes of ethics today.

It was long after civilization began before there were any written laws. Folkways and taboos furnished the rules of conduct, and the policeman was the approval of the tribe or community. Then came mandates of the chief or king, and finally written codes which applied to the king as well as to the people. Christians and Jews think of Moses as the great law-giver, and they trace many of their laws back to the Ten Commandments and other laws given in the Pentateuch. He in turn was familiar with other ancient laws, such as the code of Hammurabi, the Laws of the Egyptians and the code of the Hittites. Mixed with the laws are the rules of ethical conduct which are very basic to all codes written by the professions in later years. Matthew Arnold remarked that "The Ten Commandments constitute the very heart and kernel of the entire system, and contain, indeed, the fundamental articles of all true religion, and the very essence of all true ethical piety." Far back of the Commandments were earlier expressions of the same laws and similar rules of conduct.

Love the Lord thy God with all thy might,
Shew mercy to them that love and keep my commandments, and
Love thy neighbor as thyself.
Honor thy father and mother, that thy days may be long in the land given to thee.
Love the stranger within thy gate.

These are very high concepts of duty to God and to men, and they have been in the codes of conduct more than three and a half millenniums.

To carry the illustrations a little farther, let us look at some of the sayings attributed to Solomon in the Proverbs and Ecclesiastes:

Behold how good and how pleasant it is for brethren to dwell together in unity.
In the multitude of counsellors there is safety.
A man that hath friends must show himself friendly; and there is a friend that sticketh closer than a brother.
Seest thou a man diligent in his business? He shall stand before kings; he shall not stand before mean men.

As we studied for this paper we were almost startled at the excellence of the attitude of the ancient writers, then we remembered another saying:

Is there anything whereof it may be said, See, this is new? It hath been already of old time, which was before us.

Ecclesiastes 1:10.

We could take more time to show from many ancient writings the high tone of desirable conduct, but this will be sufficient. In passing, I might say that the background of the sayings known as the beatitudes may be found in the psalms of the Old Testament.

Christian teachings added to the spirit of legal and ethical living by emphasizing the Golden Rule, the doctrine of the second mile and by stating that love is the greatest thing in the world. This quotation from the writings of the Apostle Paul illustrates his association of ethical living with his theological teachings:

Finally, brethren, whatsoever things are true, whatsoever things are honest, whatsoever things are just, whatsoever things are pure, whatsoever things are lovely, whatsoever things are of good report, if there be any virtue, if there be any praise, think on these things.

Letter to the Philippians.

Sometimes we are tempted to believe that one race of people has developed rules of good conduct to the exclusion of similar rules by other peoples. I give the following versions of the Golden Rule to illustrate the parallel development of thinking in many religions.

MAJOR RELIGIONS HAVE A *GOLDEN RULE*[3]

Buddhism

Remember that you are like other men. As you fear and suffer, so do they. Therefore, do not do those things which will cause them trouble. As you would not harm yourself, do not harm others.

Christianity

Whatsoever you would that men do to you, do even so unto them. One should love his neighbor as himself.

[3] *The Sacred Writings of the World's Great Religions*, S. E. Frost.

(*Continued on page* 35)

Engineers Strike at Sperry Latest in Series

"STRIKE of professional engineers at Sperry Gyroscope Company, Long Island, N. Y., . . . is being watched with interest by all industrial relations men concerned with employment of engineers."

That was the opening paragraph in the March 15, 1954, issue of *Industrial Relations News*. Newspapers in all parts of the country carried reports on the strike which has now been settled.

The story started on March 2nd when it was reported by the *New York Times* and other papers: "Defense work at the Sperry Gyroscope Company plant was halted today when members of electrical unions on both the day and night shifts refused to cross the Engineers' Association picket lines." Contract negotiations between the company and the union had broken off at the Federal Mediation and Conciliation Service offices and the strike went into effect immediately thereafter. It was estimated that between 500 and 600 people, most of them executive and supervisory personnel entered the plant, but sixteen thousand employees honored the engineers' picket lines.

The Engineers' Association at Sperry, affiliated with Engineers and Scientists of America (ESA), claimed to represent 1700 of the 2300 engineers in the company. The first news report commented: "The strike will cripple defense production in one of the nation's largest concerns for manufacturing electronic and precision instruments. The company, with a total of 18,600 employees at all of its installations, does an average of $250,000,000 worth of work for the Government each year."

Economic issues were at the root of the strike. The company had offered an increase of slightly more than 6 per cent and a 12 per cent cost-of-living bonus. The union demanded a 15 per cent package increase, plus the cost-of-living increase.

On March 8th it was announced that assembly lines of the company were back in full production after the Engineers' Association voted to continue the strike, but to release the members of the electrical unions from respecting the picket lines maintained by the engineers. It was also reported that increasing numbers of electrical workers had been returning to their jobs through the picket lines and a company spokesman said that 25 per cent of the striking engineers had returned to work.

As the strike continued, the Engineers' Association published a paid advertisement in the *New York Times* of March 11, 1954, headed, "The Sperry Engineers Are On Strike." The ad listed the demands of the engineers' union including:

> "We want Sperry to deal with us collectively as the bona fide bargaining unit that we are.
>
> "We want a contract incorporating legitimate gains that have been granted to all other Sperry unions, such as union security, and job security.
>
> "We demand the guaranteed right to arbitration in return for no-strike pledge.
>
> "We want improved professional status and extension of professional privileges to all of our engineers.
>
> "We want wages comparable to those of other leading companies in our field."

THE strike ended on March 14th when the engineers' union accepted a 6.3 per cent wage package increase, the same offer as that made by the company before the strike started. The newly-signed contract will run for two years, and during the second year the company will grant the engineers an additional 2.5 per cent increase.

During the course of a debate in Washington, on March 9, 1954, while the strike was in progress, Joseph Amann, president of ESA, was asked how the ESA claim that unionism is not contrary to professional status could be reconciled in the light of the New York strike and closing down a vital defense plant. He replied: "Those on strike at Sperry are professionals, but even professionals can be provoked beyond endurance by management."

The New York Times THURSDAY, MARCH 11, 1954.

THE SPERRY ENGINEERS ARE ON STRIKE

Engineering employees at Sperry are attempting to avail themselves of the benefits of collective bargaining. The Sperry Gyroscope Company has repeatedly blocked the efforts of these employees to join the labor movement fully. THIS IS WHAT THE ENGINEERS ASSOCIATION SEEKS:

We want Sperry to deal with us collectively as the bona fide bargaining unit that we are. This they have consistently sought to avoid.

We want a contract incorporating legitimate gains that have been granted all other Sperry unions, such as union security, and job security.

We demand the guaranteed right to arbitration in return for no-strike pledge.

We want improved professional status and extension of professional privileges to all of our engineers.

We want wages comparable to those of other leading companies in our field. We want improvement in fringe benefits in areas where Sperry has fallen behind. THESE DEMANDS ARE REASONABLE.

For the past two months, including ten days of strike, Sperry has shown no real willingness to bargain.

WE STAND READY TO DO OUR PART TO END THE FIRST INDUSTRIAL WARFARE IN THE HISTORY OF THIS VITAL DEFENSE PLANT.

EVERETT TAFT, *President*
ENGINEERS ASSOCIATION
1915 New Hyde Park Road New Hyde Park, New York

Last summer another ESA union —Engineers' Association of Arma, Brooklyn, New York—called a strike of engineering employees after the company operations had been closed down by an electrical workers strike.

Federal mediators had called production losses "increasingly critical," noting that the company was engaged in secret work for the armed forces and the Atomic Energy Commission.

The 9½-week strike by the engineers' group was called after the engineers had been refraining from reporting to work by honoring the picket lines of the CIO International Union of Electrical, Radio & Machine Workers. Prior to the conclusion of the strike on the part of the engineering employees the electrical workers had reached a tentative agreement with the company. However, the electrical workers union leaders delayed a return to work until an agreement was reached by the company and the engineers' association.

The Arma group represented 750 engineers and scientists and had sought a general increase of 15 per cent, establishment of a profit-sharing plan, an agreement to negotiate a pension plan, and continuance of the union shop. According to ESA reports, the final settlement included a general increase of 2½ per cent or five cents per hour, whichever is greater; a past cost-of-living adjustment of thirteen cents per hour absorbed into base rates; continuation of the union shop, with a limitation on certain employees; and provisions on vacations, seniority, overtime, and out-of-plant compensation.

Another in the strike series of ESA units also occurred last summer when the Association of Professional Engineering Personnel, representing 850 design, development and research engineers at the RCA Camden (N. J.) plant, voted for a strike. However, a last-minute settlement was reached, preventing the actual walk-out. The union had demanded a money package increase of nearly 15 per cent, plus other monetary benefits and the strike was averted on the basis of a 7 per cent money package increase, according to ESA's report.

A PUBLIC RELATIONS REPORT FROM MISSOURI

By PAUL N. DOLL, P.E.,
Chairman of the 1953 Public Relations Committee, Missouri SPE

MORE professional engineers in Missouri work in religious and professional society affairs than in any other public relations field. Fewer offer leadership in political and cultural affairs than they do in any other field. These facts are revealed in a Missouri public relations survey which was recently conducted among its membership by the Missouri SPE.

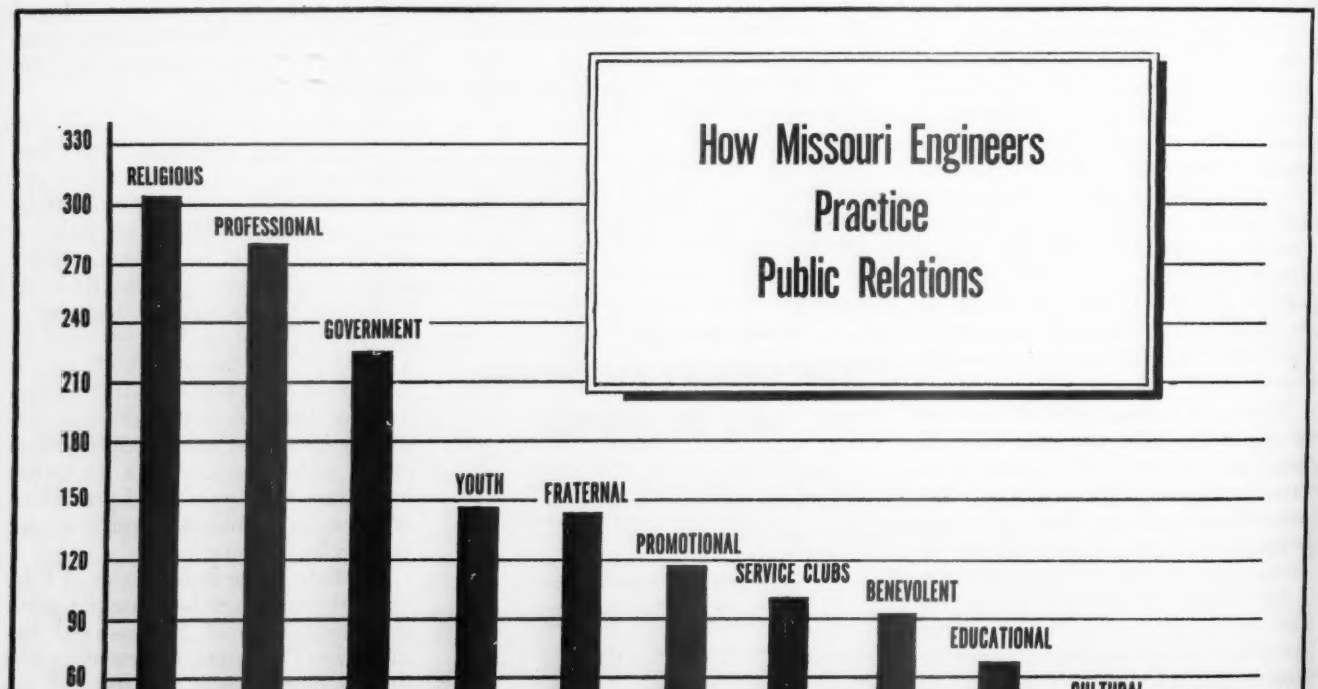
The Public Relations Committee of the Missouri group reports that a total of 473 members returned their survey forms. This constitutes about one third of the Missouri membership which now stands at 1567. The survey was conducted by mail and was considered by the Missouri SPE board of directors to be successful. It represents a fair cross-section of the Missouri organization, as a substantial number of returns were received from each of Missouri's 12 chapters.

The purpose of the survey was considered thoroughly before it was inaugurated September 1, 1953. The Missouri SPE board of directors believed it to be a reliable measuring device for determining how professional engineers fit into their communities as civic and public leaders. They passed to the Public Relations Committee the responsibility of proceeding with this project.

As one Missouri board member put it, "The day has come when professional engineers must do more than merely make a living. They must accept community responsibility and work with other leaders to make their home towns and cities better places in which to live and rear families. This survey will help us establish a bench mark and after a year or so we will take another survey of ourselves and determine if we are moving forward or backword in our communities."

The Missouri survey covers 11 different classes of public relations, which are: *Governmental, Cultural, Political, Benevolent, Religious, Youth, Educational, Promotional, Service* (Clubs), *Professional* and *Fraternal*. Each of these eleven general classifications was divided into from 2 to 8 subdivisions to give a more detailed result. The preparation of the survey form required several months' work in order that it would include as completely as possible all activities of community leaders.

THE final compilation of data shows that of the 473 returns, 307 professional engineers work in religious affairs in their communities. To make religion the foremost public work, 166 engineers are church officers, 63 are Sunday School officers and 78 are religious teachers. It is notable that youth work ranks fourth generally, one of its subdivisions—Registered Boy Scouter—ranking second to church officers in this study.



Least popular among Missouri's professional engineers as a way to serve the public are: political party officer, civic music organization officer and study club officer. This indicates that at the present time in Missouri professional engineers are willing to rely on other persons for leadership in political and cultural affairs. A complete rundown of general public relations classes and the number of Missouri P.E.'s, out of 473 reporting, giving leadership to each is shown in the chart.

MISSOURI SOCIETY OF PROFESSIONAL ENGINEERS
Box 365
Jefferson City, Missouri

TO ALL MEMBERS OF MSPE:

It will be of value and considerable interest to our members to know the extent to which they contribute collectively to their communities, other than by their regular means of employment. In order to obtain this information accurately you are urged to indicate those community activities and organizations in which you are an active participant as an officer, a commissioner, a board member or leader.

Your information will be held in strict confidence. It will be included with data of other members and summarized for your chapter and for the Society. Only totals will be made public. Identity of individual information will be impossible and valueless.

Please fill out the following form by checking the proper lines that fit your case. Return the survey in the enclosed envelope. Thank you for your cooperation.

Sincerely yours,
THE BOARD OF DIRECTORS

M.S.P.E. PUBLIC RELATIONS SURVEY — MEMBER'S COMMUNITY ACTIVITIES

I. Governmental
- .....1. City Council
- .....2. Planning and/or Zoning Committee
- .....3. City Park Board
- .....4. Airport Commission
- .....5. Civil Defense Officer
- .....6. Street Commission
- .....7. Light & Water Commission
- .....8. Other

II. Political
- .....1. Political Party Officer—etc.
- .....2. Other

III. Cultural
- .....1. Civic Music Officer
- .....2. Study Club Officer
- .....3. Other

IV. Benevolent
- .....1. Community Chest Board Member
- .....2. American Red Cross Officer or Board Member
- .....3. Hospital Board Member
- .....4. Heart Association Officer
- .....5. Infanile Paralysis Officer
- .....6. Crippled Children Society Officer
- .....7. Other

V. Religious
- .....1. Church Officer
- .....2. Sunday School Officer
- .....3. Other

VI. Youth
- .....1. Registered Boy Scouter
- .....2. Youth Group Officer
- .....3. City Recreation Council
- .....4. Other

VII. Educational
- .....1. Board of Education
- .....2. Parent Teachers' Association Officer
- .....3. Library Board Member
- .....4. Other

VIII. Promotional
- .....1. Chamber of Commerce Board
- .....2. Junior Chamber of Commerce Board
- .....3. Conservation Federation Board Member
- .....4. Industrial Development Commission
- .....5. Fair or Livestock Show Board
- .....6. Other

IX. Service
- .....1. Service Club Officer
- .....2. Service Club Board Member
- .....3. Other

X. Professional
- .....1. Society Officer
- .....2. Society Board Member
- .....3. Registration Officer
- .....4. Other

XI. Fraternal
- .....1. Organization Officer
- .....2. Organization Board Member
- .....3. Other

The survey was based on *actual* leadership extended. This was construed to mean—officers, board members, teachers and so forth. Mere membership in organizations and committees did not constitute a basis for leadership in the Missouri study.

The ten most popular fields for leadership in this study are: Church Officer, Registered Boy Scouter, Professional Society Officer, Sunday School Officer, Church School Teacher, City Planning and/or Zoning Officer, Fraternal Officer, Chamber of Commerce Officer, P.T.A. Officer, and Civil Defense Officer.

The ten least popular fields are Political Party Officer, Civic Music Officer, Study Club Officer, Library Board Member, Member of Board of Education, City Recreation Council Officer, Heart Association Officer, Infantile Paralysis Officer, Livestock Show or Fair Board, and Red Cross Board Member.

THERE was little feeling among the Missouri group against taking the survey. Only in rare instances did the "it's none of your affair" attitude become an issue. In these cases, the survey sheet was not executed and it was made very plain that no person was being asked to cooperate against his personal wish. It was carefully pointed out that an individual record would be held in strict confidence; that only the totals had any value and would be made public.

Another Missouri P.E. said, "I have been up to my eyes in all of these things as a young man. As an old man, I must now make a living." There is wisdom in this statement. It is foolish for any professional engineer to believe he can successfully live by concentrating his time and effort on civic work and by slighting his livelihood without ending his career in disaster.

There is a happy medium for professional engineers to maintain. This Missouri study will help to find it. It includes making a living and at the same time shouldering a fair share of community responsibility. The good engineer finds this place and pursues it consistently during his lifetime.—*End.*

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—Milwaukee for Engineering Progress

BY HERBERT MOORE, P.E.,

Milwaukee Chapter,
Wisconsin SPE

MILWAUKEE, a city with a long engineering history will open its doors to the National Society of Professional Engineers June 9, 10, 11, and 12. A wide choice of inspection trips through either industrial plants or public works facilities will be available to those attending the Society's Twentieth Annual Meeting. A new power plant, both large and small manufacturing plants, a modern sewage disposal plant and a filtration plant will be a few of your many choices to see. The growth of Milwaukee's many industries is reflected in the history of the city's public works.

One of the great features of Milwaukee is the undulating lay of the land overlooking Lake Michigan. The lake was tapped as a source of water supply which of course became a main factor in the development of the city's industrial life.

In 1875, Kilbourn Reservoir was built on a hill at an elevation of 150 feet above lake level. It held a capacity sufficient to supply the needs of the city of 100,000 population for a week at the rate of demand of some 2,600,000 gallons of water per day. Kilbourn Reservoir is still in use supplying the downtown "low-pressure," district.

Having an unlimited water supply stimulated the growth of industries requiring large quantities of water—tanneries, breweries and malting plants, meat-packing plants, and dairies. There followed manufacturing plants seeking the generally excellent environment available. They comprised the electrical and industrial machinery manufacturing which gave this city unique diversification.

In the ten years' time following the construction of the reservoir, sewers and drains were built taking advantage of the excellent natural drainage afforded by the three rivers emptying into Lake Michigan at what was to become a thriving harbor. However, odors eminating from the polluted streams became unbearable. In 1886 George H. Benzenberg, City Engineer, recommended an ingenious solution to the problem which is still in use. He recommended that tunnels be constructed to provide for pumping Lake Michigan water into the rivers to flush out the offending pollution. Within two years one tunnel was completed and subsequently a second tunnel was constructed. That took care of the Milwaukee and Kinnickinnic Rivers. Even a third tunnel was contemplated for the Menomonee River, but was never constructed.

The pumping capacity of the two flushing tunnels provides for displacing the volumetric capacity of the two rivers once every twenty-four hours. Huge pumps lift the water up an elevation of about six feet at a capacity of some 900 cubic feet per second. Thence, it flows out

(*Continued on page* 37)

Above: Milwaukee, Wisconsin, looking north. This is the interesting city which will play host to NSPE members from across the Nation during the Society's Annual Meeting to be held June 9-12.

Where Will You Be the Night of June 11?

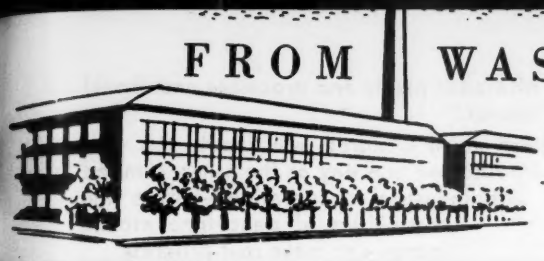
First Come First Served!

Milwaukee Braves vs. Philadelphia Phillies baseball tickets for FRIDAY, JUNE 11th., your open night at the 20th Annual NSPE Meeting.

LIMITED NUMBER!

Two $2.50 box seat tickets to each member. Preference to out-of-Wisconsin members. Send check payable to J. Randall Meyer, treasurer. Enclose self-addressed stamped envelope. *Mail now to J. Randall Meyer, 3112 W. Highland Blvd., Milwaukee 8, Wisconsin.*

Below: Home of the Braves.



FROM WASHINGTON

By
Milton F. Lunch,
N.S.P.E., Legislative Analyst

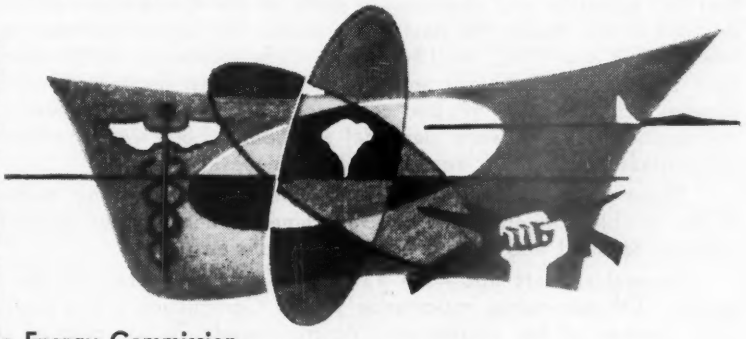
INDUSTRIAL FUTURE FOR ATOMS

When the political dust has settled, history may record that the most significant decision of all those made by the politicians was the arrangement for the development of atomic energy.

The President has taken the initiative in current discussions on this question, having asked Congress to amend the Atomic Energy Act of 1946, many provisions of which he declares are "inconsistent with the nuclear realities of 1954." The Presidential message recognized the vital role of engineers and scientists in future atomic developments, declaring: "Before our scientists and engineers lie rich possibilities in the harnessing of atomic power."

Congress was told by the President that the possibilities of civilian use of atomic power have increased faster than was anticipated. In 1946, he said, economic industrial power from atomic energy sources seemed very remote; today, it is clearly in sight—largely a matter of further research and development, and the establishment of conditions in which the spirit of enterprise can flourish.

"What was only a hope and a distant goal in 1946—the beneficent use of atomic energy in human service—can soon be a reality." Citing the need for cooperative work between the Federal Government and industry to bring about the necessary development, the President recommended a series of amendments to the law:



1. Relax statutory restrictions against ownership or lease of fissionable material and of facilities capable of producing fissionable material.
2. Permit private manufacture, ownership, and operation of atomic reactors and related activities, subject to necessary safeguards and under licensing systems administered by the Atomic Energy Commission.
3. Authorize AEC to establish minimum safety and security regulations to govern the use and possession of fissionable material.
4. Permit the Commission to supply licensees special materials and services needed in the initial stages of the new industry at prices estimated to compensate the Government adequately for the value of the materials and services and the expense to the Government in making them available.
5. Liberalize the patent provisions of the law, principally by expanding the area in which private patents can be obtained to include the production as well as utilization of fissionable material, while continuing for a limited period the authority to require a patent owner to license others to use an invention essential to the peacetime applications of atomic energy.

Senate Majority Leader Knowland is confident that the Joint Congressional Committee on Atomic Energy will assign a "high priority" to the President's proposals. However, the President coupled his domestic law changes with suggestions for authorization to provide a freer exchange of atomic information with other free nations. This latter point has evoked considerable concern by some key legislators and a likely result may be a slower and more cautious approach to the entire set of recommendations. The proposals on domestic development, therefore, may not be acted upon this year, unless they can be separated from the international aspects.

The above comment does not mean that even the domestic proposals will go through Congress with ease. Senator Edwin C. Johnson of Colorado, a member of the Joint Committee, has announced that he is opposed to the Presidential suggestion to permit private industry to own and operate atomic power plants independent of the Government. "Private industry is now working and cooperating fully with the Atomic Energy Commission. This plan is working so well that I don't know of any reason for changing that policy." Of the same opinion, in general, Representative Chet Holifield of California, also a member of the Joint Committee, declares that wider industrial participation should be encouraged, "but the time is not yet ripe for fundamental changes in the basic legislation." The Californian sees moves afoot "to give monopolistic controls over peacetime atomic energy to a few

(Please turn the page)

large corporations. The American people are the owners of atomic plants and processes and should receive the full benefits of atomic energy development for peace."

The Johnson-Holifield view points up the basic argument which Congress will debate this year or the next. All are agreed that the fundamental issue must be resolved one way or the other—limited private ownership rights v. complete Government control with industrial cooperation—before the possibilities of peacetime atomic energy can make real progress.

Meanwhile, AEC has proposed a five-year program of building atomic furnaces to help put atomic energy into industrial use. Dr. Henry D. Smyth, scientist member of the Commission, told a recent meeting of the American Institute of Chemical Engineers that the program was devised to determine if atomic energy can be produced cheaply enough to be of general use, a problem in which the financial risks "are still too great for private industry to carry alone." It is a mistake to think that private industry can or will pick up the burden of development of nuclear power plants in the present state of the art, he said. "It is a field in which knowledge and competence are still largely confined to Government laboratories," he said, pointing out, however, that AEC hopes for greater and greater participation by industry both technically and financially and for a gradual transfer of the nuclear power part of the Commission's responsibilities to private enterprise.

* * * * * * * * *

The 15th Semi-Annual Report of the Atomic Energy Commission, issued January, 1954, states that the scientific and engineering staffs of the Commission and its operating contractors more than doubled in size during the past seven years. The largest increase occurred in the four-year period between 1949 and 1952. In 1947 these staffs numbered 6,050 scientists and engineers or 17.28 per cent of a total of 35,000 employees. As of last September, of a total employment of 77,700 employees, 13,582 or 17.48 per cent were scientists and engineers. Of this number 1,623 were chemical engineers, 1,412 were electrical engineers, 1,804 were mechanical engineers, 448 were metallurgical engineers and 1,786 were in other branches.

These facts, related to only one aspect of the national defense picture, point up the intensity of the problem involved in the Governmental handling of scientific and engineering manpower in relation to draft and reserve manpower policies.

Several reports ago—the 13th Semi-Annual Report of the Commission—the observation was made: "Of continuing importance to the Commission is the reservist and draft status of a considerable number of key employees. Approximately 25 per cent of all professional and managerial employees of the AEC and its contractors are members of Armed Forces' reserve components. About 10 per cent of all scientific and engineering personnel are subject to call under the Universal Military Training and Service Act of 1951." The report then noted the importance of obtaining deferments for key personnel in the cited groups.

This situation illustrates the reason for the grave concern in industry and in some Government offices over the failure thus far to devise a satisfactory military service policy for engineering and scientific personnel. Last month's article in this space noted recent developments along that front and a separate story reported Selective Service action in establishing experimental advisory boards in six states to provide guidance to local draft boards considering draft status of specialized professional personnel.

General Hershey, director of Selective Service, has made it quite clear, however, that the committees of advisors will be strictly "advisory" and that the local boards may avail themselves of the advice without surrendering any of their authority to make the draft decisions. The Selective Service announcement states that "there is no immediate pressing need for such advisory committees . . ." but it was deemed advisable to explore the problem now against an emergency when such a program might be necessary. General Hershey has advised the State Directors that they can set up the advisory program in the six states as they think best.

Some observers of the specialized manpower-military problem believe that the program is not off to an auspicious or promising start in view of the somewhat undue emphasis on local control and final word by those not experienced or skilled in the function or key role of scientists, engineers, chemists and other technical specialists. They fear that, even with the advice of technical experts, too many state or local boards controlled by non-specialized persons will fail to recognize the basic and essential differences between the contribution of a technical specialist in industry to the national defense and others upon whom judgment must be passed. As noted from the AEC figures, as well as other sources, more important than the Selective Service-draft problem is that of the reservists; a problem which has not yet received the Congressional consideration required. With the Congressional adjournment date drawing closer, it would appear that another year will go by without an attempt at resolution of a situation which could cause havoc in industrial production should another emergency burst upon the scene as occurred in June, 1950.

N.S.P.E. Believes

STATE PRESIDENTS' CONFERENCE

BY PAUL H. ROBBINS, P.E.

Executive Director

N.S.P.E.

BY THE time this issue of the AMERICAN ENGINEER reaches its readers, the president of each of our state societies or his representative, will have returned to his home state, following attendance at the annual State Presidents' Conference held this year in Pittsburgh, Pennsylvania.

This two-day meeting has proved to be of considerable value not only to those who attend but also, in its carry-over values, to each member of the Society. The conference has three primary objectives: First, it offers an opportunity for the state presidents, many of whom have either just assumed office or will assume office this spring, to become fully acquainted with the national programs and state activities aimed at improving the status of engineering; secondly, it provides an opportunity for each to discuss with the presidents of other state organizations, ways and means by which they have resolved some of the problems they face and details of programs which they have found particularly successful; thirdly, it provides an opportunity for them to become acquainted with others of the engineering profession who are charged with similar responsibilities and with whom they will undoubtedly have correspondence and communication during the period of their administrative responsibilities as presidents of the various state organizations.

There are several subsidiary benefits from such a conference. Many of these benefits directly affect the individual members of the Society. High on such a list would be the fact that with an opportunity for the entire Society to attack particular problems in a coordinated manner, we are assured of the maximum benefit from our efforts.

From the standpoint of efficient operation of various programs, many states can avoid pitfalls which have plagued others as they pioneered in tackling various aspects of professional development. However, in any society composed of extremely busy individuals, as is the case in the professional society, perhaps the prime advantage of the meeting is that of communication. With the state presidents having an opportunity for two days to concentrate exclusively on major professional activities, they are, of course, much better informed and are able to take back to the boards of directors of the state organizations and to many chapter groups, the basic reasoning and considerations which are necessary to develop sound and effective programs. One of the items frequently mentioned in the conference at Pittsburgh was a determination on the part of the state presidents attending to report fully to their state boards of directors, and to the degree possible to report directly either in person to or through correspondence with the chapters and the complete membership.

NSPE, based as it is on the three level organizational pattern, believes strongly that the effectiveness of professional development comes about only as individual engineers, through their local chapters and state societies, coordinate their activities in pursuing programs designed to increase the professional status of engineering. The Pittsburgh Conference was typical of all such conferences in that there are far more topics of professional significance than can be discussed in a two-day period. The topics on the agenda indicate the scope of the two-day discussions, but by their number emphasize the limitations which time imposed upon the full development of all aspects of our Society activity.

High on the list of discussions were: the problem of unionizing the engineering profession; the work of the Professional Engineers Conference Board for Industry; the work of the committee on the Engineer in Industry; the program of the committee on Young Engineers; the programs in the fields of employment practices and salary surveys; the continued emphasis on public relations for the profession; concern for improved registration and recognition of the values thereof.

NSPE believes such conferences to be extremely beneficial carrying forward the same objectives and benefits to the state and chapter levels. Such conferences are always open to members who can attend and they would be of considerable interest to all.

The Pittsburgh Chapter scheduled its regular March meeting for the first day of the conference, thus encouraging members in the local area not only to attend the discussions of the presidents, but to participate in the banquet on Friday evening at which the group had the opportunity of hearing Mr. A. C. Monteith, vice president of the Westinghouse Electric Corporation, present his observations on the development of professional employees in industry.

The Presidents' Conference each year provides another opportunity for carrying forward the basic philosophy of the NSPE: to integrate as strongly as possible, professional programs at the chapter, state and national levels, so that the coordinated result will always maintain the full professional stature of engineering.

About Engineers' Week--1954

"Engineering—Builder of a Strong America" is a theme that has become the concern of all United States citizens if reports piled up at the National Society of Professional Engineers' Washington headquarters are any indication. The celebration of National Engineers' Week, February 21 to 27, 1954, brought honor and recognition to engineers throughout the nation.

The roster of those who paid official tribute—from President Eisenhower, who saluted the profession in his letter to T. Carr Forrest, Jr., to the many governors and mayors who signed official proclamations—reads like a governmental *Who's Who*.

In the United States Senate on February 23, the Hon. George W. Malone of Nevada, a registered professional engineer and a member of the Nevada SPE and NSPE, called the attention of his colleagues to the observance and asked and received their unanimous consent to insert President Eisenhower's letter to Mr. Forrest in the *Congressional Record*. On the same day in the House of Representatives, the Hon. Augustine B. Kelley of Pennsylvania spoke briefly on the significance of National Engineers' Week, emphasizing the important contributions of the engineering profession to daily living.

Later in the week, on the 25th, Representative John Bell Williams of Mississippi again focused attention on the celebration in a speech in the House. Representative Frazier Reams of Ohio paid a similar tribute and, by unanimous consent, placed in the *Record* a letter of Arthur E. Fryer, historian of the Toledo Society of Professional Engineers, which had originally appeared in the Daily Forum column of the *Toledo Blade*.

Countless businesses and industries cooperated in the observance, also, particularly in furnishing display space. Radio and TV stations were universally generous with their public service time. From coast to coast leading newspapers commented editorially upon the accomplishments and importance of the profession. Many schools—such as Louisiana Polytechnic Institute, Ruston, La.; Tennessee Polytechnic Institute, Cookeville, Tenn., and Georgia Institute of Technology, Atlanta, Ga.—organized special programs and exhibits in connection with the observance. Numerous other engineering societies cooperated in programs on the local level in a way that contributed significantly to the week's success.

NSPE's affiliated state societies and chapters, under the over-all national chairmanship of Anatole R. Gruehr, did yeoman service in putting the message of the professional engineer across to the public. A complete review of all their accomplishments would almost require a book for adequate presentation, but following are some of the highlights garnered from state and chapter reports. . . .

On the west coast, Governor Goodwin J. Knight of California officially proclaimed Engineers' Week throughout the state with many mayors, including Norris Poulson of Los Angeles, Harry Marks of Modesto, E. S. Christoffersen of Turlock, and W. B. Reynolds of Oakdale, following suit. . . . Highlight of the Los Angeles Chapter celebration was the annual dinner dance for which NSPE Executive Director Paul. H. Robbins served as toastmaster. . . . Through the joint efforts of the Los Angeles and Pasadena Chapters, the ABC west coast radio network of 35 stations in California, Washington, Oregon, and Nevada gave major attention to the story of engineering. . . . Pasadena's engineer-mayor, Clarence A. Winder, was one of the main speakers at that chapter's February 24th meeting, stressing the need for engineers in public life. . . . The Stanislaus Chapter, sponsored one of the most effective week-long programs that gained widespread attention from press and radio. Its members took part in the Modesto Junior College Career Day held for area high school seniors, and four important displays in downtown Modesto spotlighted the role of the engineer in building a strong America.

Members of the New Mexico Society were among those achieving major radio and TV coverage of the event. . . . The Tidewater Chapter of the Virginia Society sponsored a 15-minute TV panel discussion of the Hampton Roads Bridge-Tunnel Project which is of great importance to the people of the Norfolk area. . . . In Georgia the Macon Chapter reported such excellent home audience response to a 30-minute panel discussion on TV that more questions were phoned in than could possibly be answered during the program. . . . Acting Mayor Peter Roe Nugent proclaimed Engineers' Week in Savannah, while Chamber of Commerce President Nephew K. Clark was the main speaker at the week's "kick-off" dinner. . . . In Atlanta, 48 outstanding high school seniors, under the sponsorship of the various GSPE chapters, spent a day as guests of Georgia Tech.

A variety of programs marked the celebration in North Dakota. Particularly well-received was the "Engineers' Round Table" TV show in the Minot area, featuring professional en-

(*Continued on page* 24)

Forrest Wins Award

Highlight of the annual Engineers' Week banquet in Dallas, Texas, February 25th, was the presentation of the "Engineer of the Year" Award to NSPE President T. Carr Forrest, Jr. L. L. Dresser of Tulsa, Oklahoma, a past president of the National Society, made the presentation to Mr. Forrest.

A second guest of honor at the banquet was Major General Samuel D. Sturgis, Jr., chief of the Army's Corps of Engineers, who delivered the principal address of the evening.

AMA Tribute

". . . The engineering profession, important to the American way of life, is aiding in the maintenance of America's supremacy in the adaptation of newly discovered, barely explored forces of nature to the needs of the day. . . .

"The achievements of engineers in the development of processes and equipment that have promoted and contributed to health are considerable and far reaching. . . . By working together in the future as they have in the past, the potential of medicine and engineering is unlimited."

—*The Journal of the American Medical Association*, Feb. 20, 1954

Tennessee Tech Pledge

". . . Realizing the tremendous debt of gratitude which we owe to those pioneers in our profession, we do dedicate ourselves to the service of mankind as members of the Engineering Profession and sincerely undertake to pass on to future Engineers our priceless heritage, augmented by the fullest measure of our own endeavor."

—Program Notes, Engineering & Industrial Arts Day, Tennessee Polytechnic Institute

ENGINEERS' WEEK SCENES. *Top row:* New York's Governor Dewey signs proclamation while NYSSPE members R. Wylie, E. W. Sanford, Jr., C. M. Gilt, C. A. Miller, M. J. Roses, and A. R. Gruehr look on, l. to r. Attending Los Angeles Chapter dinner-dance, seated l. to r., were E. R. Quesada, Capt. J. O. Biglow, USN, and Dr. R. E. Vivian and, standing, J. D. Rufo, Dr. F. M. Weil, P. H. Robbins, C. Lambesis, and A. P. Rich. *Second row:* Missouri SPE Pres. J. W. Hubler receives proclamation from Governor P. M. Donnelly. North Alabama Chapter display is featured by Belk-Hudson Co., Sheffield, Ala. Philadelphia City Representative W. Phillips shows a copy of Mayor J. S. Clark's proclamation to Tobias Koch and Ralph Hoch. *Third row:* Participants in TV show of Galveston County Chapter, TSPE, are, l. to r., E. Kinzer, Mrs. Violet Greenwood, R. Beane, E. Fox, F. Webb, Jr., and Col. Lang. Attending Anthony Wayne Chapter banquet in Fort Wayne, Ind., are, l. to r., R. P. Cheesman, A. Martin, presidential aide Kevin McCann who was guest speaker, R. J. Erb, and D. A. Chambers. *Last row:* Brig. General F. L. Howley addresses Toledo, O., engineers. R. E. Salveter, J. H. Carter, Mayor R. R. Tucker of St. Louis, Mo., O. L. Luft, and C. W. Schemm, l. to r., talk over Mayor Tucker's just-signed proclamation. A Rice's Fashion Center window in Norfolk, Va., features a Tidewater Chapter display.

Engineers' Week

(*Continued from page* 22)

gineers and Minot High School seniors; and in the Grand Forks area the P.E.'s inaugurated a program of voluntary guidance on an individual basis to high school students interested in engineering careers. . . . In Illinois, Governor William G. Stratton issued a proclamation, as did the mayors of Aurora, Champaign, Urbana, LaSalle, Peru, Joliet, and Waukegan. . . . Also in Waukegan, a special eight-page supplement to the *News-Sun* of February 22nd featured engineers and engineering accomplishments as arranged for by the Lake County Chapter.

From Massachusetts

"The professional engineer often works in obscurity. His name seldom makes the headlines. But his skill, ingenuity, tireless research and imagination are often translated into untold riches for his fellow citizens. He deserves a special salute during Engineers' Week."

—The *Item*, Lynn, Mass.

Reports of both professional and social events have been received from the Evansville, Calumet, and Anthony Wayne Chapters of the Indiana Society. . . . White House aide Kevin McCann was guest speaker at a Fort Wayne Engineers' Week banquet sponsored by nine local engineering groups including the Anthony Wayne Chapter. . . . Engineering career advice was the theme of various programs sponsored in four Evansville, Ind., high schools. . . . One of the various special programs in Michigan was that of the Detroit Chapter at which Murray D. Van Wagoner spoke on "The Engineer in World Affairs." . . . In Minnesota emphasis was on radio and TV presentations; and on the Twin City Station, WDGY, Bill Cleary's regular "Let's Talk It Over" program featured prominent engineers as guests on four evenings.

Innumerable successful programs were reported by the various chapters in Ohio. . . . Mayor Robert Lemley of Mansfield signed an official proclamation. . . . One of the most outstanding schedules was that arranged by the chapter in Portsmouth, where Mayor Harry E. Foehr issued a proclamation and similar cooperation was secured from every segment of the community. A particular highlight was the radio broadcast, from a tape recording, of the address made by Program Chairman W. G. Calder before the Kiwanis Club. . . . In the three-county area covered by the Central Ohio Chapter special radio programs and industrial displays marked the observance.

Marion Chapter engineers joined OSPE student chapter members for a special celebration at Ohio Northern University. . . . The Muskingum Valley Chapter (Marietta, O.) devoted greatest emphasis to plans for encouraging young people to consider engineering as a career and also secured radio time for "The Engineering Story." . . . In Cuyahoga Falls, Akron District SPE members held a dinner meeting with the ASME.

Highlight of the New York observance was the February 23rd symposium presented at Columbia University in which NSPE President T. Carr Forrest, Jr.; Dr. John A. Krout, vice president of the University; and Dr. Lyman Bryson, guest professor of mechanical engineering, took part. NYSSPE President Carl M. Gilt introduced the symposium speakers and also Dr. John R. Dunning, dean of engineering, who gave a special address. . . . One of the busiest Engineers' Week speakers in the country, Dr. Dunning also delivered the main address of the February 24th program in Milwaukee, Wis., sponsored jointly by fourteen engineering groups including the local chapter of the WSPE. . . . Again in New York, successful programs were arranged by many other chapters. Important displays were sponsored by the Suffolk and Niagara County Chapters in cooperation with local businesses. . . . In the Steuben Area Chapter, one of the local newspapers devoted its "Inquiring Reporter" column to the opinions of prominent engineers on the emphasis on engineering in colleges.

The outstanding event of the observance sponsored by the Philadelphia Chapter, Pennsylvania SPE, was the presentation of an award to Col. Walter Krueger, Jr., as the outstanding engineer of the metropolitan area. . . . Other men who received "Engineer of the Year" awards in various ceremonies included P. V. Pennybacker of the Travis Chapter, Texas SPE, Howard T. Tellepsen of the San Jacinto Chapter (Houston area), and Clyde C. Hays of the Central Texas Chapter (Waco area).

A forum presented over KGUL-TV, Galveston, Tex., sponsored jointly by the Schreiber & Miller Furniture Co. and the Moseley Refrigeration Co., in conjunction with the Galveston County Chapter, was an outstanding example of the cooperation generally given by local businesses and television stations throughout the week. . . . A forum luncheon in Tulsa, Oklahoma, was one of the many ways in which the local Chamber of Commerce, as so many others, cooperated with the Tulsa Chapter. . . . Similarly in Springfield, Mo., Wilmer Thompson of the Ozark Chapter, Missouri SPE, was guest speaker at the Chamber of Commerce luncheon, while other prominent engineers from the Rolla School of Mines addressed the Queen City Kiwanis and Optimist Clubs. . . . And in Jefferson City, Missouri, the mayor (an honorary chapter member) and presidents of the local Rotary, Lions, Chamber of Commerce, and other civic-minded organizations were guests of the local P.E.'s at a special banquet.

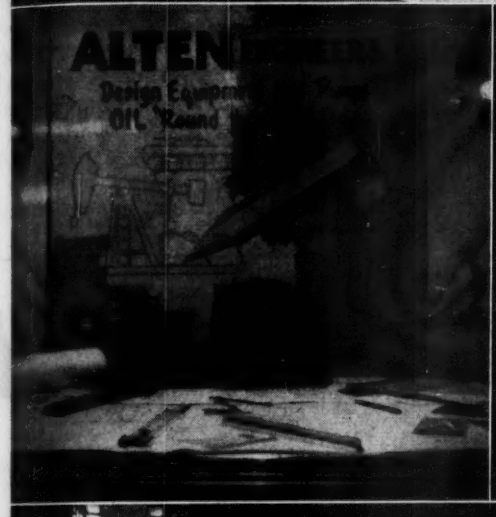
"Engineering and the General Welfare" was the subject on which Alexander S. Langsdorf, dean emeritus of engineering and architecture at Washington University, addressed the St. Louis Electrical Board of Trade which paid tribute to engineering in its *Weekly Flash* and at its February 23rd luncheon. . . . MSPE Lead Belt Chapter members prepared feature articles for local papers. . . . Past NSPE President John D. Coleman was featured speaker at the Kansas City, Mo., Chamber of Commerce meeting in the Western Chapter area.

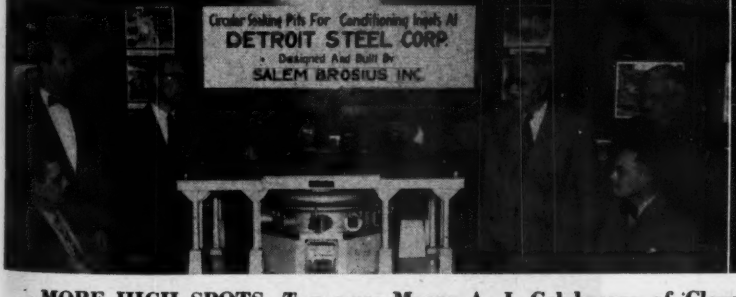
In Topeka, Kansas, members of the Topeka SPE, the Kansas Engineering Society and the Topeka Engineers' Club joined forces to promote Engineers' Week activities. . . . The Central Chapter of the Arizona Society provided numerous radio and TV broadcasts and spot announcements in the Phoenix area. . . . In Connecticut, the members of the Connecticut Technical Council participated in meetings and programs with CSPE groups.

Unique Display

One of the most unusual Engineers' Week displays was that sponsored by the Westchester County Chapter, NYSSPE, in cooperation with the Consolidated Edison Company of White Plains. The four-window display gave a visual "Portrayal of Progress through Engineering," incorporating such items as a 110-year-old kerosene street lamp, a scuttle-a-day water heating stove, and an antique icebox with their modern "engineered" counterparts.

The story was repeated everywhere. Engineers and the engineering profession were accorded well-deserved recognition, while the American public learned quite a bit more about the important role that P.E.'s are playing unobtrusively but significantly in their daily lives.—***End.***





MORE HIGH SPOTS. *Top row:* Mayor A. J. Celebrezze of Cleveland signs the proclamation while P. A. Harlamert, L. D. Cheverly, B. B. Farmer, and T. F. Hindman look on, l. to r. Tulsa P.E.'s W. D. Branick, W. J. Fell, and Col. F. J. Wilson, seated, and C. O. Clark, C. Gordon, and P. Plovanick, standing, go over plans for the Oklahoma SPE convention held during Engineers' Week. *Second row:* The Alten Engineers display in Lancaster, O., was sponsored by the Central Ohio Chapter. Texas SPE vice president, J. B. Dannenbaum, right, presents the San Jacinto Chapter's award to H. T. Tellepsen while D. T. Martin watches. Westchester County Chapter P.E.'s arranged for this display by the Consolidated Edison Co., White Plains, N. Y. *Third row:* A. C. Risberg, Mrs. D. R. Lammering, and Indiana SPE Pres. J. R. Swanton attend Calumet Chapter Auxiliary's buffet dinner. New York Mayor Robert C. Wagner signs a proclamation before A. R. Gruehr, D. J. O'Connell, G. C. Beck, R. J. Reddy, A. A. Vioni, and E. Elvove, l. to r. *Last row:* In Portsmouth, O., Detroit Steel Corporation chief engineer Leo DeFiore explains soaking pit model to W. H. Walter and G. R. Fuller, seated l. and r., and W. G. Calder, P. Grady, and H. Danner, standing. Floyd Zook, incoming Oklahoma SPE president, receives the president's cup from W. H. Carson, outgoing president, during Engineers' Week convention ceremony.

book looks

The Book: **Executive Leadership**
The Author: **Chris Argyris of Yale University's Labor and Management Center**
The Publisher: **Harper & Bros., New York**
Reviewing the Book: **Former NSPE Vice President, C. G. Roush, District Manager, Westinghouse Electric Corp.**

THIS is a highly interesting and thought provoking treatise on Management in modern industry. It describes with actual in-plant activities one type of Management technique that proved to be quite effective.

Perhaps you may not fully agree with the procedures. I believe a thorough study of this book, however, might help the engineer to gain a better understanding of industrial organization and operation. It might help explain why in some types of organizations the Professional Engineer cannot function in a truly professional manner of independent thinking and action.

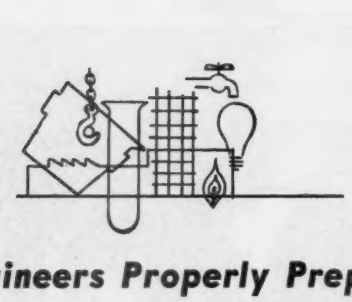
Our National Society of Professional Engineers has been trying to educate the engineer and his management that the Professional Engineer is more a part of Management than is the production worker. One of the chief difficulties has been with the thinking of the engineer in not acting in a purely professional manner—of independent thought and action—within the policy limits of the company. Perhaps part of the reason Management has not encouraged this type of action and thinking is that the engineer has been too narrow and technically specialized in his thinking to grasp the over-all picture of his company's business structure and its over-all operating problems. He may also have been inclined to think of himself too much as a production worker.

Every engineer should, therefore, welcome the opportunity of learning more about industrial organizations and some of the management's operating problems.

The book entitled *Executive Leadership*, written by Mr. Chris Argyris of the Labor and Management Center,

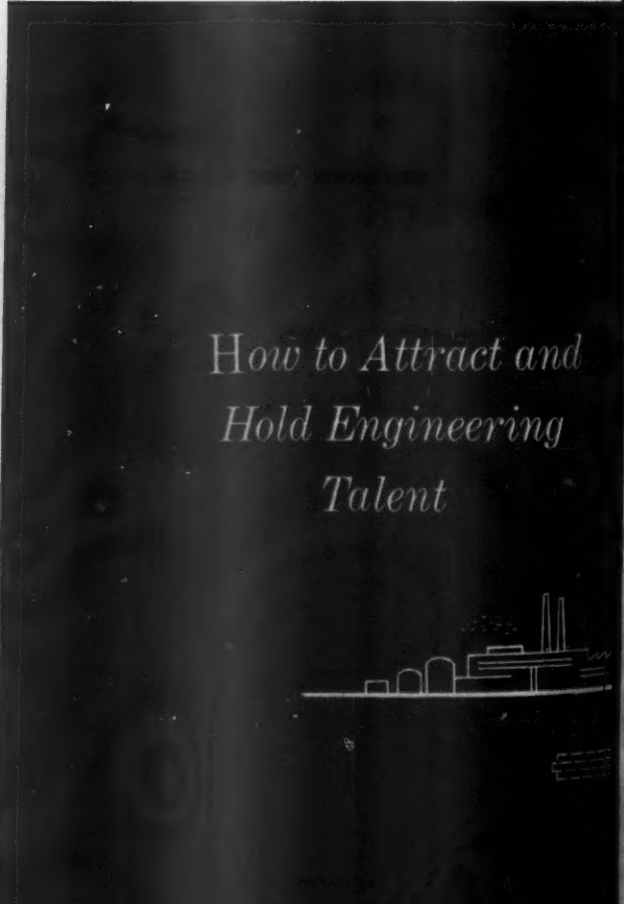
What Makes an

What about tomorrow?



Are Engineers Properly Prepared?

What about Unions?



Yale University, gives a short, concise picture of a successfully operated organization—the thinking and methods of top Management—and the reactions and operations of its top supervisory personnel.

The book is short enough to be read in one full evening. It is divided into three main parts so as to clearly bring out the important points. It contains the report of a research into the operations of this plant, carried on over a period of several years.

The present Chief Executive took over the plant when it had been operating for some time quite inefficiently and at a loss to the corporation. During the four or five years since he took over, it has been built into a highly efficient and profit-making plant. The research covered the greater part of this period and is still continuing. As the report is studied it will be noted some of the methods first used gradually changed as the plant operation improved.

The three main parts of the book are as follows:

Part I. "The Leader (or Executive) in Action."

The Researcher spent considerable time in the plant observing the Executive as he counseled with and directed his supervisors. From this data he outlines his ideas as to the motivating factors in the Executive's method of managing. The Researcher does not comment as to whether the methods are good or bad.

Later he asks the Executive to outline his motives and methods of operation as he himself interprets them.

There is much similarity in the two chapters which proves quite well the correctness of the Researcher's observation and analysis.

Summarizing this part—the Executive developed close personal direction over each top supervisor and practically controlled his entire actions and thinking. During the early period the Executive felt his supervisors were not sufficiently interested in the company and their jobs to handle them properly, so he gave very close supervision. Later in the report it will be noted this relation changed, to the good of the plant operation.

Part II. "The Effects of the Leader Upon the Supervisors."

This part describes how, due to the dominant and forceful methods of the Executive, the Supervisors did not

(*Continued on page* 38)

ineer Happy or Unhappy?

EXECUTIVE RESEARCH SURVEY NUMBER 3

HOW TO ATTRACT AND HOLD ENGINEERING TALENT

(SURVEYS NUMBER 1 AND 2 ARE LISTED ON COUPON)

THIS STUDY, the third in a series designed to aid in the improvement of relations between management and its engineer employees and to increase the efficiency of engineer utilization in industry, is the result of a nationwide survey of thousands of engineers who are employed in all fields of professional endeavor and of more than 200 executives of companies which employ engineers.

At a time when industry is clamoring for more and more engineers, it should prove an invaluable handbook not only for management but for all employed engineers as well.

The price? Two dollars per copy for non-members of National Society of Professional Engineers; one dollar per copy for members, up to 25 copies. Price for quantities over 25 copies will be quoted on request.

LOOK AT THESE CHAPTER TITLES . . .

The Raw Material

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The Goal of the Young Engineer

The Professional as an Employee

Benefits and Incentives

What About Unions?

How to Attract and Hold Engineering Talent—Summary and Recommendations

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State Presidents Exchange Ideas in Pittsburgh

Last month in Pittsburgh—the Nation's foremost steel city and a place where the engineering profession is by no means unappreciated—NSPE State Presidents gathered to talk Society and professional problems. They left for their homes after two days' discussions armed with new ideas for effective 1954 programs.

The two day affair which was presided over by Society President T. Carr Forrest, Jr., dealt with subjects ranging from registration to engineering education to Engineers' Week. Among the highlights was a comprehensive discussion of the problem of engineering unions presented by President-elect Clarence T. Shoch.

Using film slides as well as a tape recorder to document his presentation, Mr. Shoch dramatically covered the aims and actions of the unions. Further, he used excerpts from speeches of professional leaders to illustrate how unionism and professionalism were incompatible. It was stressed that the threat of unions was a problem of today and not the future, and that concerted action must be taken now to combat the issue.

Another portion of the program of keen interest to the visiting officers, was a panel discussion of state publications. Those participating were Engineers Charles Stillman, New Jersey; Paul Harlamert, Ohio; F. T. Drought, Texas; and Ross Johnston, W. Va. The talks covered the editorial and advertising aspects of publications at the state and chapter levels. The speakers urged their fellow State Presidents to attempt some kind of publication even though it might be only of the news letter type.

During the first day of the conference, the newly formed Engineers-In-Industry Committee held its own meeting under the direction of its Chairman Robert A. Blackburn. On the second day, Mr. Blackburn reported the results of the discussions to the entire group. He told how Committee members had discussed problems of the engineer working in industry, with industrial leaders who had also attended the meeting. These executives represented consulting firms, electrical manufacturing companies, construction material firms, and the rubber, steel, petroleum, and chemical industries.

"We are going to gather all the facts we can get on these problems that face the engineer working in our great industries," Mr. Blackburn said, "and then we are going to get this material together in a publication. This publication will serve to guide us in our future work."

Considerable time was given to the field of public relations. With Vice President E. W. Seegar presiding, the national program for the coming year was related. Then Past President John D. Coleman reviewed the work of the Professional Engineers Conference Board for Industry, of which he is now Chairman. The Board, Mr. Coleman said, will publish a fourth Executive Research Survey report later in the year, probably on the subject of training the engineer in industry.

National Engineers' Week Committee Chairman Anatole Gruher discussed the successful 1954 observance and told of plans for next year. Many of the State Presidents reviewed their celebrations at the local level, giving in considerable detail how their programs were conceived and carried out.

Not All Work

All was not work at the affair. The Committee on Arrangements, which included Alfred M. Danzilli as Chairman and Don C. Peters and Robert Gorman as members, provided a gala social schedule for the visitors. Luncheon speakers were Arthur C. Twomey, Director of Education, Carnegie Institute, and John P. Robbin, Executive Director, Urban Redevelopment Authority.

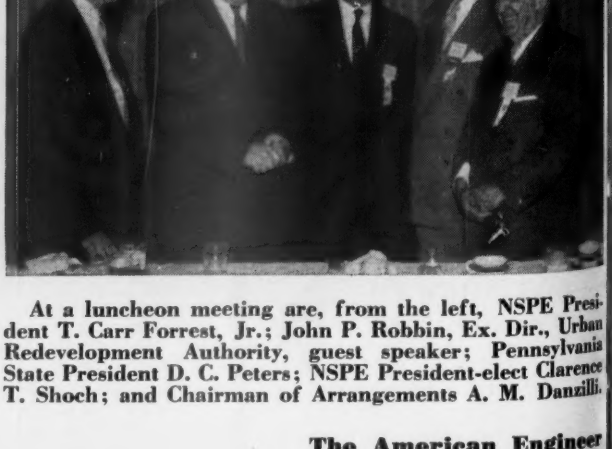
At a gay banquet, Mr. A. C. Monteith, Vice President in Charge of Engineering, Westinghouse Electric & Manufacturing Company, was guest speaker. Mr. Montieth's subject was "Professional Development—a Mutual Responsibility."

Banquet Toastmaster Dr. John W. Graham, Jr., also called upon NSPE President T. Carr Forrest, Jr., Pennsylvania SPE President Don C. Peters, and Professor Robert Gorham, President, Pittsburgh Chapter, Pennsylvania SPE, for their remarks. The invocation was given by Reverend Howard J. Ford of St. Paul's Cathedral.

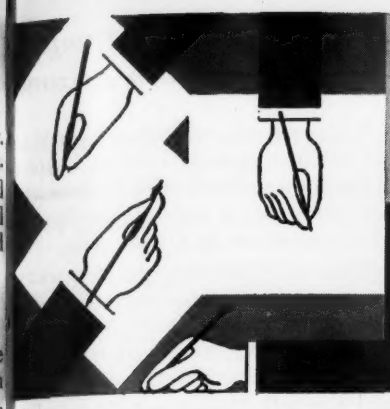
Some of the visiting presidents remained in the Steel City following the meeting in order to visit the huge industrial plants. The local program of air pollution control also commanded the interest of many of the engineers.

(See page 21 for another story on meeting—*Editor.*)

Members of Kiwanis Clubs from across the nation gathered to chat at the meeting. From the left are State Presidents S. A. Michael, Nebraska; E. P. Smith, Delaware; W. A. Cox, Virginia; and Society Treasurer Russell B. Allen of Maryland.



At a luncheon meeting are, from the left, NSPE President T. Carr Forrest, Jr.; John P. Robbin, Ex. Dir., Urban Redevelopment Authority, guest speaker; Pennsylvania State President D. C. Peters; NSPE President-elect Clarence T. Shoch; and Chairman of Arrangements A. M. Danzilli.



Professional POSTSCRIPTS

This is your department. Your contributions to it are solicited. We want your views on subjects that affect the engineering profession directly or indirectly. Please keep your contributions short, and remember that editing may be necessary to conserve space. Your name may be omitted if you desire.—*The Editor.*

The problems of the engineering profession are world-wide and amazingly similar. The following extract from the publication of the India Society of Engineers might well have appeared in a U.S. engineering publication (and probably has) with the exception of different names and spelling. Here, then, is our first —PP— contribution for this month:

—PP—

". . . We beg to apologise that we could not persuade ourselves to agree with the Prime Minister (Nehru) that the specialised knowledge of the engineers was 'wasted' when they were employed in purely administrative affairs. The inherent weakness of this logic becomes apparent in his own argument that there was no dearth of 'pen-wielders' but the number of engineers was insufficient. It is our considered opinion that it is this 'specialised knowledge' of an experienced engineer that is best suited to administer affairs of a Secretariate embracing engineering works administration. We are afraid it will be a pitfall of bureaucratic approach to the question of secretarial or administrative business if it becomes a policy that even specialist departments and institutions will continue to be run by the members of the Civil or Administrative Service, completely ignorant of technical knowledge."

—PP—

Developments in medical science have prolonged life expectancy. In the case of older men, many are often in good health and much too vigorous to accept retirement from their lifelong careers. Engineers especially are needed and should remain on the job, yet the problems of keeping them there are numerous. The situation is international, and below we publish an article on the subject recently appearing in the Engineers' Guild Journal of London, England. It is entitled, "Robinson and Jones," by Engineer L. N. Duguid.

—PP—

"Why doesn't old Robinson get out of it and give someone else a chance? He could have retired three years ago but he seems set for another ten. Still, he'll have to go soon without the option. I've got nothing against the old chap. He does more than his share of work and he certainly knows a thing or two—always seems to know the way out of a snag—but dash it all, I've been here five years now, and don't seem to be much further on than when I came. On the first day *I'm* entitled to a pension you won't see me for dust. Robinson could retire tomorrow and live comfortably on his pension. He never seems to spend much. But he hangs on to his job."

Robinson said much the same thing forty years ago. But things seemed rather different when the day of retirement drew near. He didn't feel much older. He didn't want to go. Nevertheless the day had to come. Robinson had to go. He went.

It was rather pleasant at first, going out shopping with the wife and having a coffee in the High Street, calling in at the library and even beginning to be recognized by the girl in the pay-box at the cinema. But the novelty wore off, and even those never-ending little jobs about the house and garden seemed to have an end after all, and not to fill the day like they did. You can't keep on forever overhauling the lawn mower, and the car—well the car was all right, but of course on pension it was not possible to use it as much as before. The bulbs were all bought for the new bed in the garden, but it was still too early to put them in.

Robinson had to admit it. The joys of retirement on pension were wearing thin. He was getting bored.

Jones was like Robinson in many ways—a man of similar calibre. He was having a spell at home. It had happened before. He had had a variety of jobs, each one adding to his experience and reputation. He had been abroad for a bit—had never wanted to be in the same place all his life. He rather scorned the permanent job with a pension—might just as well be a civil servant. But his savings were small and this spell at home was getting much longer than usual. Things were beginning to look serious. He had always thought that he could command a job any time; now people were polite, even kind, but they all had a multitude of reasons why they couldn't give him a job at his age. He had heard of people being called too old to take on a new job but never thought it could ever apply to him. Had he arrived at that stage?

What is to become of the Robinsons and the Joneses? Obviously they ought to have jobs, not only for their own sakes, but also for the sake of their country and their fellowmen. . . .

Whose responsibility is it to find jobs for Robinson and Jones? It is, of course, their own responsibility to do everything they can to fix themselves up with jobs. They are professional engineers. Their services are of great value to the community and they can still do many more years of useful work. It is nevertheless difficult for the older engineer to find new employment, and repeated disappointments can be very distressing. Where then should they turn for help? Surely to their own colleagues in their own profession. If the engineer-

(*Continued on page* 39)

Michigan Society of Professional Engineers—Annual Meeting. April 9, 10. Michigan Union, University of Michigan, Ann Arbor, Michigan.

New York State Society of Professional Engineers—Annual Meeting. May 6-8. Hotel Commodore, New York, New York

Pennsylvania Society of Professional Engineers—Annual Meeting. May 7, 8. Bedford Springs Hotel, Bedford, Pa.

New Jersey Society of Professional Engineers—Annual Meeting. May 7, 8. Hotel Ambassador, Atlantic City, New Jersey.

National Society of Professional Engineers — Annual Meeting. June 9-12. Schroeder Hotel, Milwaukee, Wisconsin.

Georgia Society of Professional Engineers—Annual Meeting. June 18, 19. Ralston Hotel, Columbus, Georgia.

With Our Members . . .

Annual Meetings

Oklahoma and Minnesota Societies Hold Engineers' Week Conventions

Among the annual meetings scheduled during National Engineers' Week were those of the Oklahoma and Minnesota Societies of Professional Engineers.

Held February 25-27 at the Hotel Tulsa, the nineteenth annual meeting of the Oklahoma SPE came as the climax to a varied Engineers' Week schedule in the City of Tulsa. Outgoing President W. H. Carson presided at the Thursday and Friday business sessions but turned his gavel over to incoming President Floyd Zook at installation ceremonies on Saturday morning, Feb. 27.

Mayor C. M. Warren delivered an address of welcome to the delegates. Other major speakers were Newton R. Graham, vice president, Oklahoma Planning and Resources Board; Oscar Monrad, vice president, First National Bank and Trust Company, Oklahoma City; and C. Y. Thomas, NSPE vice president.

The engineers of the Tulsa Chapter, of which William J. Fell is president, served as hosts for the meeting; and a special program for the ladies was arranged under the auspices of the Ladies' Auxiliary.

The Hotel Nicollet, Minneapolis, was the scene of the two-day annual meeting of the house of delegates and board of directors of the Minnesota SPE, February 24-25. MSPE President W. L. Hinderman presided, and principal guest speaker was G. Sidney Houston, economist for the First National Bank Group of St. Paul and a member of the Tax Study Commission appointed by Governor Anderson. The subject of his address, delivered at the February 24th luncheon, was *The Impact of Taxation on Minnesota's Industrial Development.*

Another highlight of the meeting was the panel discussion on *Unity in the Engineering Profession,* which was led by Past President Charles E. Doell.

Passaic Engineers Salute L. F. Frazza

Louis F. Frazza, New Jersey SPE national director and newly-elected Northeastern Area vice president, was honored recently at a testimonial dinner given by the Passaic County Engineering Society, a chapter of the New Jersey SPE.

The occasion also marked the establishment of a scholarship fund for the assistance of engineering students in Passaic County. Mr. Frazza has been appointed to head the scholarship committee to administer the fund.

New Chapte Organized in Arizon

A charter was recently presented t the newly-organized Eastern Chapte of the Arizona Society of Professiona Engineers at a special meeting ASPE members in Globe, Ariz.

Officers of the new chapter, whic covers four Arizona counties and portion of another, are: A. H. Nea president; W. Scott Merrill, vic president; Oscar Lyon, Jr., secretary and Kenneth Hammes, state directo

Appalachian Chapter Officers

Officers of the Appalachian Chapter, West Va. SPE, include, l. to r.: Rober Davis, state director; T. Howard, director; Ennis A. Naeve, secretary-treasurer Paul W. Fiegley, first vice president; John P. Hindsley, outgoing president; B. E Corker, newly-elected president; and Lloyd G. Fitzgerald, second vice president

Fairman and Hausmann Honored At Dinner

The Kings County Chapter of the New York State SPE, currently celebrating its silver anniversary, paid tribute to two eminent members—Dr. James F. Fairman and Dr. Erich Hausmann—at a testimonial dinner at the Bossert Hotel in Brooklyn on March 24th. Dr. Fairman, a leading industrial figure, is vice president of the Consolidated Edison Company of New York, while Dr. Hausmann, a noted author and educator, is dean *emeritus* of the Brooklyn Polytechnic Institute.

Certificates of recognition were presented to the two distinguished engineers, and Mayor Robert F. Wagner of New York City headed the special committee of dignitaries who paid tribute to them. The committee also included other elected officials of the City of New York, various city commissioners, the presidents and deans of colleges in the metropolitan area, the presidents of many leading technical societies, local members the State Board of Regents, member of the State Board of Examiners Professional Engineers and Land Su veyors, and prominent businessmen

Oliver Deatsc Speaks In San Jos

NSPE National Director Olive Deatsch appeared as guest speaker the March 9th meeting of the San Jos Chapter, California SPE. The meetin was held in the Engineering Buildin of the San Jose State College, and M Deatsch discussed professional prob lems and national programs.

Annual Meeting Chairmen . . .

To list your meeting under "Dates to Remember," send complete information (date, hotel, city) direct to the American Engineer as soon as it is scheduled.

. . . more news on page 3

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Atomic Energy Lecture In Philadelphia

The March 4th meeting of the Philadelphia Chapter, PSPE, featured a lecture by Dr. Wilbur E. Kelley, vice president in charge of engineering for the Catalytic Construction Company. Dr. Kelley, who served as a lieutenant colonel in the Corps of Engineers during the war, acting as operations chief at Oak Ridge, Tennessee, discussed *Engineering Aspects of the Atomic Energy Program*. He emphasized in particular the ways in which the skills of various types of engineers, (civil, electrical, mechanical, and chemical) were coordinated in developing the complete atomic energy program.

John T. West, Jr., Speaks To Collegians

John T. West, Jr., the executive secretary of the Pennsylvania SPE, recently was guest speaker at a meeting of the student branches of the technical societies at Lafayette College, Easton, Pa. He discussed engineering registration at the event, which was arranged by Professor William G. McLean of the College, who is also regional vice president of the American Society of Mechanical Engineers.

New Officers For East Bay, Cal. Chapter

New officers of the East Bay Chapter, California SPE, were installed on March 26. They include: Maurice M. Ridker of Piedmont, Cal., president; Earl M. Buckingham, first vice president; Earl J. Hesse, second vice-president; John L. Boyen, secretary; E. O. Driggs, treasurer; Clarence B. Coleman, state director; and Alex Nadelle, Arthur Souza, and Richard M. Starns, Jr., chapter directors.

Alaskan Highway Described For Wisconsin P.E.'s

Professor Carlin Dahler of La Crosse State College was the guest speaker at a recent dinner-meeting of the Western Chapter, Wisconsin SPE, held at the New Villa in La Crosse. Professor Dahler, who has motored over the Alaskan Highway, chose that trip as his subject and illustrated his lecture with colored slides.

At the same meeting reports on the Milwaukee Convention were also given by Chapter President L. F. Kehoe and State Membership Chairman F. L. Carlson.

With the Ladies

By MRS. FRANK W. CHAPPELL
Chairman, NSPE Ladies Advisory Committee

A state auxiliary to the Oklahoma Society of Professional Engineers was organized at the recent annual meeting of the Society in Tulsa. Officers of the new organization are: Mrs. William J. Fell, Tulsa, president; Mrs. Calvin Childress, Tulsa, first vice president; Mrs. C. A. Stoldt, Oklahoma City, second vice president; Mrs. Harold Pickens, Oklahoma City, third vice president; Mrs. J. Roy Black, Oklahoma City, sec'ty; Mrs. H. G. Thusen, Stillwater, treasurer.

Board of directors members are: Mrs. Louis Goetz, Mrs. Eben Magoffin, Mrs. Charles Hubbell, Mrs. Paul Farrington, Mrs. Wyatt Hendrick, Mrs. Glenn Wilson, Mrs. James Bennett, and Mrs. R. F. Danner.

Members of the auxiliary to the St. Clair Chapter, Illinois SPE, were in charge of arrangements for the ladies' activities in connection with the ISPE convention, held at the Broadview Hotel in East St. Louis, March 25-27. Mrs. Raymond G. Brichler was general chairman in charge of the social events for the ladies, assisted by Mrs. Arthur J. Feickert as co-chairman.

. . . more news on page 34

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Forrest Speaks A Oklahoma University Career Conferenc

Engineering Horizons of Tomorrow was the subject chosen by NSPE President T. Carr Forrest, Jr., at the Career Conference held at the University of Oklahoma on March 2nd. Stressing the importance of a true professional outlook, Mr. Forrest reviewed predictions and trends that will govern the career of the engineer of tomorrow and advised the prospective engineers to meet the challenge of the future with enthusiasm.

He applauded efforts being made in educational institutions today to broaden the outlook of the engineering student by the introduction of cultural as well as technical subjects, but also emphasized that "the basis of our profession is and always will be sound and advanced technical knowledge." Finally, he urged the future engineers to identify themselves as part of the engineering profession by taking steps to achieve registration.

Ethics

(*Continued from page* 14)

Confucianism
What one does not like to have done to himself he should not do to others. The rule of philanthropy is to draw from one's self a parallel for treatment of others.

Jainism
One should treat all beings as he himself would be treated. Since all beings hate pain, he should kill nothing.

Judaism
What you hate do to no man. One should love his neighbor as himself.

Since European and American thought have drawn so heavily from Greeks as well as Judean teachings, we should spend a little time noting the contribution of the Greeks to our ethical concepts. No doubt many of their scholars were familiar with the sayings of neighboring peoples, yet it seems that they, almost independently, developed a philosophy of living of a very high order.

ARISTOTLE, tutor of Alexander the Great, wrote a book on ethics which was taught in the Greek schools of his day and became a textbook in Europe during the Renaissance. He taught the doctrine of the golden mean as being the way to a life of happiness and high honor. Virtue was counted the mean between two extremes as for example:

rashness *bravery* cowardice
extravagance *munificence* miserliness
gluttony *temperance* fasting

One sample will be enough to show his approach to noble actions:

> A man is not a good man at all who feels no pleasure in noble actions, just as no one would call that man just who does not feel pleasure in acting justly, or liberal who does not in liberal actions, and similarly in the case of the other virtues which might be enumerated: and if this be so then actions in accordance with virtue must be in themselves pleasurable.

To the Greeks is attributed the earliest of the professional codes which is still used by the doctors of today. Many centuries before the beginning of the Christian era Hippocrates took the Oath printed on this page.

The elements of this Oath are similar to those which go into a professional code of ethics of today:

Recognizes his obligation to his teacher—will pass the knowledge on to his students.

Benefits of patients come first:
Will give no deadly medicine, even if requested,
Will give no medicine to produce an abortion,
will go into the house for the benefit of the sick.

I will refrain from activity which may be better performed by someone else.

I will not seduce the members of a household.

What I hear in confidence, I will hold in confidence.

I will hold this Oath sacred.

Almost at the dawn of history the professions had their beginnings. Which came first is probably not too important, since they are old enough to have learned many lessons.

Medicine is certainly a very old art; for many centuries the scribes were the keepers of the law and advisors to the kings; the ministry descended from the priests who have lived in every generation, and the engineers have constructed the bridges, the pyramids and the highways of many centuries. More recently the guilds of the Middle Ages made the rules of the professions, fixed the training needed and set the standards of admission.

Modern codes of ethics have been prepared during the present century. The doctors still use the Oath of Hippocrates, but they have further canons which follow the outlines used by the other professions. Ministers are guided by the articles of the several faiths. Lawyers have codes for legal practitioners, and a code for judges. Engineers have written codes for each major field of engineering, and they have adopted a general code prepared by a Committee on Ethics of Engineers' Council for Professional Development.

For a better understanding of the engineering codes we will discuss a few items which usually follow the pattern:

About the Author . . .

N. W. Dougherty, dean of engineering at the University of Tennessee, Knoxville, and NSPE vice president for the Southeastern Area, has long been known for his devotion to professional principles and his efforts in behalf of solving professional problems.

Holding engineering degrees from both the University of Tennessee (B.S.) and Cornell University (C.E. and M.C.E.), he is a member of Tau Beta Pi, Phi Kappa Phi, Sigma Xi, and Chi Epsilon. Professionally he has been active in many engineering and scientific societies in addition to NSPE.

His offices have included the chairmanship of the Tennessee State Board of Architectural and Engineering Examiners. He is also the current chairman of the NSPE Foundation Funds Committee.

OATH OF HIPPOCRATES

Early 4th Century B.C. Given in Heermance.

I swear by Appollo the physician, and Aesculapius, and health, and All-heal (Hygeia and Panacea, daughters of Aesculapius) and all gods and goddesses, that, according to my ability and judgment, I will keep this Oath and this stipulation—to reckon him who taught me this art equally dear to me as my parents, to share my substance with him, and relieve his necessities if required; to look upon his offspring in the same footing as my own brothers, and to teach them this art, if they shall wish to learn it, without fee or stipulation; and that by precept, lecture, and every mode of instruction, I will implant a knowledge of the Art to my own sons, and those of my teachers, and to disciples bound by a stipulation and oath according to the law of medicine, but to none others. I will follow that system of regimen which, according to my ability and judgment, I consider for the benefit of my patients, and abstain from whatever is deleterious and mischievous. I will give no deadly medicine to any one if asked, nor suggest any such counsel; and in like manner I will not give to woman a pessary to produce abortion. With purity and holiness I will pass my life and practice my Art. I will not cut persons laboring under the stone, but will leave this to be done by men who are practitioners of this work. Into whatever house I enter, I will go into them for the benefit of the sick, and will abstain from every voluntary act of mischief and corruption; and further, from seduction of females or males, of freedmen or slaves. Whatever, in connection with my professional practice or not in connection with it, I see or hear, in the life of men, which ought not be spoken abroad, I will not divulge, as reckoning that all such should be kept secret. While I continue to keep this Oath unviolated, may it be granted to me to enjoy life and practice this Art, respected by all men, in all times! But should I trespass and violate this Oath, may the reverse be my lot!

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a. Relation of practitioner to his client or employer
b. The relation of practitioners to colleagues
c. Relation to the general public
d. Relation to the profession itself.

Ethics of the lawyers cover similar topics:

> Legal ethics is that branch of moral science which treats of the duties which a member of the legal profession owes to the public, the court, his professional brethren and to his client.
>
> Bouviers, *Legal Ethics*, Drinker

Over the years some records of decisions have been kept, but the best records of all have been kept by the lawyers who have recently published a large volume[4] of decisions of the Bar. Since usually a court decision acts as a precedent a large amount of weight is given to previous decisions, though a present-day court or profession is not necessarily bound by the decisions of a previous generation.

> The ideals of men best project themselves into reality when crystallized into written documents . . . . In every line of human activity, a united written expression of what is best for the common good becomes a strong force for progress. The mere expression clarifies the general sentiment.
>
> Heermance, *Ethics* Introduction

To illustrate the usual form of engineering ethical codes, we will quote from the Canons of Engineers' Council for Professional Development, which have been adopted by a number of engineering societies.

Clients

The engineer will act in professional matters for each client or employer as a faithful agent or trustee.

He will disclose no information concerning the business affairs or technical processes of clients or employers without their consent.

Here we encounter some rather difficult problems. What is the responsibility of an engineer who has designed a project, and incidentally learned certain trade secrets, when he goes to a competitor for a similar employment? In broad outline his duty is plain. But should he use his knowledge of the other plant to improve the present design? Here he may have a conflict between his duty to one client and his duty to another. The simple problem of working for two masters is very easy. The lawyers go further than the engineers on this item of the code. In Canon 6 they say:

> The obligation to represent the client with undivided fidelity and not to divulge secrets or confidences forbids also the subsequent acceptance of retainers or employment from others in matters adversely affecting any interest of the client with respect to which confidence has been reposed.

Subsequent employment may not be accepted if it requires the use of information obtained in confidence from a previous employer.

Engineers may find themselves in this position after rendering service to a client where it became necessary to learn his trade secrets and later being offered a commission with a rival company. Employee engineers find themselves in a similar position when they change employment within a major industrial field. Civil engineers may encounter this situation in cases of valuation or appraisal, but rarely in structures, transportation or public service. Special devices are usually patented rather than covered by trade secrets.

His Colleagues

He will take care that credit for engineering work is given to those to whom credit is properly due.

He will not try to supplant another engineer in a particular employment after becoming aware that definite steps have been taken toward another's employment.

An engineer may have difficulty in determining the amount of credit to give to a competitor, or a colleague, but in general work well done will furnish enough credit to go around. I have never been afraid to cooperate with another agency because of the

[4] *Legal Ethics*, Henry S. Drinker.

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Syracuse New York

difficulty in dividing the credit. If the job is well done there is enough credit for all; if it is poorly done many shoulders can better carry the load.

Where there is work to be had by competition, there is temptation not to recognize steps already made to employ someone else. Some of the most elementary cases which come before the state boards have their origin in competition for work. One recently was amusing, and one with which no legal authority could afford to deal. One practitioner stated that the other had been in an adjoining room and had heard his fee proposal, and, as a consequence, he was underbid on the work. Theoretically both should know the fees to be charged by the other, since it is common custom that no one should try to get work by cutting the standard or recognized fee. There is an old equity rule: "He that seeks equity must do equity."

The Public

He will have due regard for the safety of life and health of the public and employees who may be affected by the work for which he is responsible.

He will refrain from expressing publicly an opinion on an engineering subject unless he is informed as to the facts relating thereto.

The first rule states not only an ethical principle, but a rule of law. No one can create a hazard and deny responsibility by putting up a sign "keep out." A professional must go further than the law requires; he should remove all the hazard if it is reasonably possible to do so.

CERTAINLY a professional must not be criticizing the work of his neighbor when he is unfamiliar with the facts, but fortunately he is warranted in such criticism if the facts show that the work was poorly done. Some professions go so far as to refuse criticism no matter what the facts indicate.

The Profession

The engineer will endeavor to protect the engineering profession collectively and individually from misrepresentation and misunderstanding.

The engineer will not advertise his work or his merit in a self-laudatory manner, and he will avoid all conduct or practice likely to discredit or do injury to the dignity and honor of the profession.

By failing to protect the profession the engineer is failing to protect himself; his good name is tied up with that of the profession. However, there is a much broader principle on which the item is based. It is unethical to allow any individual or organization to be misrepresented by wrong criticism.

The last item I put in with a purpose. We have overworked the idea of self-laudatory language to make it mean that there shall be no advertising whatsoever. The item may be satisfactory in stating the principle regarding competitive work, but it is too modest in bringing the engineering profession before the public at large. I want someone to cry our good deeds from the housetop.

No doubt the background for the item against self-laudatory advertising came from medicine and law. In the early days of law, advertising was unethical because the young lawyers were sons of the noblemen who thought it beneath their dignity to solicit clients to increase their incomes. Their income, and standing in the community, was secure without fees from the profession they were practicing.

The concept then changed to unethical practice because advertising gave an unfair advantage, if self-laudatory. This drifted into unethical practice if the advertising was designed to get business, e.g., the listing in a telephone directory in bold type is forbidden because it might attract attention above that of other regular listings.

Engineers have adopted the principles without the background of noble birth, or the confining relation of almost exclusively personal service. Engineers are justified in condemning self-laudatory language, but not in condemning all kinds of advertising.

These samples give us some of the typical provisions of the ECPD Canons. When we analyze them we will find that they are not recent developments, but they rest upon principles which were stated many centuries ago.

Professionalism is based on ethical precepts rather than legal requirements, the service motive, the relation of confidence, the sharing of professional knowledge; common aims and common objectives are the unifying influences.

The doctrine of the second mile, the over-and-above service, the relation of confidence and respect, credit where credit is due, sharing technical knowledge, group activity for the benefit of the whole are not legal requirements, but are ethics of good will.—***End.***

CLASSIFIED ADVERTISING

Minimum 3 lines.

Undisplayed: $1.50 per line.
Displayed: Same rate as General Advertising.

Positions Wanted: Undisplayed, 75c per line. Displayed, 50% off General Advertising Rates.

Box Number chargeable as one line.

Mail Box Number replies to:

AMERICAN ENGINEER
1121 15th St., N.W.
Washington 5, D. C.

Position Wanted

ENGINEER
Experienced in supervising the design of complete mechanical and electrical systems, including heating, ventilating, air conditioning, boiler plants, plumbing and electrical work from basic layouts through completion of field installation. Administrative as well as technical background. Write Box 301, AMERICAN ENGINEER.

BSME EIT with over 1000 hours instruction in electronics. 2 years design experience. Age 26. Desires affiliation with small group of Professional Engineers. Will relocate. Write Box 303, AMERICAN ENGINEER.

Mechanical Engineer, P.E., over 5 years experience in heating, air conditioning, and refrigeration design, desires overseas position. Presently employed. Write Box 302, AMERICAN ENGINEER.

Milwaukee

(*Continued from page* 18)

the river channels into the lake.

Thus Milwaukee was one of the earliest cities to provide for sewage disposal by dilution. It did serve the purpose of eliminating the odor nuisance but sad to relate, it had the ill effect of contaminating the drinking water supply. The germ theory of disease and the work of Pasteur and Koch was just becoming known.

Although Milwaukee built a new intake some six miles distant from the harbor mouth located in nearly seventy feet of water 6500 feet from shore, the water supply still was polluted from time to time.

An attempt was made to further check pollution by construction of intercepting sewers, now totaling 155 miles, which discharge sewage and waste at Jones Island at the south harbor entrance. There in the early twenties T. Chalkley Hatton did pioneer work on the activated sludge process and started a reclaiming process for sewage sludge which is now marketed under the trade name "Milorganite," an organic fertilizer. Population tributary to the plant is 815,500. A major expansion program is being planned for the manufacture of another by-product, Vitamin B-12.

Water pollution abatement did not

(*Continued on page* 39)

Letters

(*Continued from page* 5)

AMERICAN ENGINEER of April, 1936, and covering the substance of addresses I delivered before engineering groups throughout the country, I explained and illustrated this objective of securing public credit and recognition for engineers in connection with their works. Permit me to quote three salient paragraphs.

"It is a common experience to attend the dedication ceremonies of great engineering projects, and to hear the oratorical tributes to the politicians, the officials, and the bankers, *with no reference to the engineers!* In 99 cases out of 100, the names of the engineers are missing from the newspaper accounts, omitted from the commemorative plates, and unknown to the public. In fact, the public is generally left quite unconscious of the part played by engineers in these works. The members of our sister profession, the architects, both individually and collectively, have taken care of this problem and have mastered the art of establishing themselves in the public consciousness."

"To remedy this situation, State Societies of Professional Engineers have been organized and these have banded together to form the National Society of Professional Engineers. The most important activity for this organization is in the field of public relations—to place the engineer properly before the public and to secure public understanding and recognition for the engineering profession."

"We can conduct a campaign, through published resolutions, publicity, correspondence and editorial cooperation, to secure proper public recognition of the engineer and his work. We can wage a campaign to secure credit for engineers in connection with the works designed and executed by them, including specific recognition and credit in published accounts and illustrations, in dedicatory exercises, on name plates, and on commemorative tablets."

I believe that the foregoing excerpts are sufficiently informative and stimulating to merit publication by you. In fact, I feel that you would be rendering a service to the profession if you would reprint my article on "Professional Recognition" from the April, 1936, issue of The AMERICAN ENGINEER.

In conclusion I maintain that the seeking, welcoming, or securing of dignified credit is entirely proper for a professional man, and is, in fact, to be recommended. I further maintain that it should be one of the objectives of N.S.P.E. to help engineers in securing dignified professional credit for their work and for their contributions. If the engineering profession is not going to give credit and recognition to engineers, we cannot ask the public to do so.

D. B. STEINMAN, P. E.
New York, N. Y.

Military Research In Schools Is Reported

The Role of Educational Institutions in Military Research is the title of an interesting paper by Robert E. Cron, Jr., which has been published in booklet form by the Carnegie Press, Carnegie Institute of Technology.

Pointing out that in modern warfare the "fundamental depedence on science and technology, particularly in the field of basic research, makes the role of the educational institutions more important than ever to our national security," he reviews the history of research in the schools before and during World War II, in the period between World War II and the Korean conflict, and then discusses current programs and probable future needs.

Book Looks

(*Continued from page* 27)

work together well as a team. Tension was developed and each Supervisor tried to protect himself and his group from —and at the same time gain favor with—the Executive. He did this by trying to show and tell the Executive only what he felt the Executive wanted to know and hear.

It would seem that this would have resulted in poor operation. The Executive, however, was so sincere in his actions that with his knowledge and driving power it ultimately resulted in improved operation and respect from the Supervisors for the Leader.

Since the Executive did not deal direct with the group under the Supervisor, but left this up to the Supervisor, and then backed him, it resulted in developing ultimately greater respect for the Supervisor from his group.

Part III. "Lessons for Leaders."

This part discusses some conclusions to be drawn from this type of Management. It also describes the organization and its operation after a couple of years and many conferences with the Researcher.

The organization is operating more as a united group. Each Supervisor has learned to appreciate that his group is dependent on the success of all groups. It also brings out the fact that the Executive was of the type who continued to study himself and thus eliminated ineffective methods and substituted others.

Suggestions are then given as to how an industrial organization might operate along more democratic lines, and how the Supervisor may be made to feel he is an integral part of the organization, and thus give much more to it.

I quote—"The activities and the codes and specifications for rewards and penalties, for authority, for communication, for perpetuation, and for identification in this network of human relationships should be redefined and made part of the formal organization instead of being dependent upon the inclinations of the Leader."

CONCLUSION:

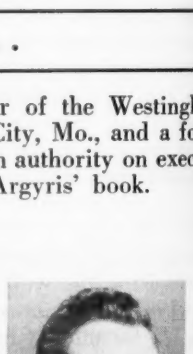
It seems to me this is a well written report of an actual case history of industrial plant operation. It is typical of the way many plants are today operated.

The basic philosophy expressed, and then illustrated or explained by actual examples of operation, will give any reader a greater insight into the over-all picture of industrial plant operation.

By understanding these facts, he should thus be better able to appreciate the operations of the particular company for which he works and be better able to perform as a Professional Engineer in the organization.

Meet the Reviewer . . .

C. G. Roush, district manager of the Westinghouse Electric Corporation in Kansas City, Mo., and a former NSPE vice president, is himself an authority on executive leadership, the subject of Mr. Argyris' book.



Mr. Roush

A 1923 electrical engineering graduate of the University of Oklahoma and a member of Sigma Tau, honorary engineering fraternity, Mr. Roush first joined the Westinghouse Corporation in Pittsburgh, transferring to Kansas City in 1925.

He has served as president of both the Missouri Society of Professional Engineers and its Western Chapter. He has also been chairman of NSPE's Public Relations Committee. He was most active in securing passage of Missouri's engineering registration law; and while president of the MSPE, he helped set up the Engineers-in-Training Program in three Missouri engineering schools.

He is a member of various other engineering organizations and many civic groups, including the local Chamber of Commerce.

Postscripts

(*Continued from page* 29)

ing profession as a whole were to accept responsibility for ensuring that the older engineer could find new employment, a big step would be taken towards the solution of an important social problem—one that is growing every day.

The Engineers' Guild has been studying this problem recently. As the representative body of the professional engineer it has an especial obligation to help find the solution. It knows of the many reasons that can be brought forward for not employing the older engineer. It knows also of jobs having been created for the benefit of the older engineer but also to the advantage of the employer who has set him to work again. Notice that word "created." By all means let the older man compete on level terms with the younger man for any regular vacancy. What the Guild wants to convey is that a job can often be *created* by an employer who asks himself the question "what use could I make of a highly skilled and experienced older engineer wanting a job?" There *are* jobs —useful, worthwhile jobs—which the older men can do, jobs which would not otherwise be done. This is not mere benevolence; it can be commercially sound. . .

—PP—

The need for registration was one of the early struggles of the NSPE. Today the Society still does much to encourage engineers to register. Of recent interest was a short piece written by Henry M. Lummis, III, P.E., on the value of registration, and we reprint it below. Engineer Lummis is from Paducah, Ky., and a member of the Kentucky SPE.

—PP—

When an engineer has acquired all of the necessary qualifications required to obtain his professional engineering license he owes it to the public, his profession, and himself to apply for registration.

Far too few people realize what portion of their tax money is spent for projects involving engineering design and decisions. The cost, usefulness, quality and safety of these projects is directly affected by the competency of the men involved in their design. The prime function of the state registration laws is to allow only qualified men to perform these engineering duties. Innumerable benefits can be derived from using registered professional engineers on projects involving public monies and these benefits are probably more difficult to recognize than in any other profession. Only in the most extreme cases of poor engineering does the importance of good engineering become apparent to the public. Such cases are often not publicized but many are readily obvious to qualified professional engineers. However, the engineer may not be aware of the work being done; therefore he is not in a position to correct the situation until the job is complete at which time it is too late. To avoid such cases a professional engineer should be engaged at the outset. Not only is the public's money misused by poor engineering practice, but sadly enough unethical practices in engineering decisions account for many unnecessary expenditures. When an engineer receives his professional license he is bound by the engineering "Code of Ethics." While 100 per cent compliance among engineers to this code is never quite possible, registration and acknowledgement of the code will greatly reduce unethical practices. This will not only result from an individual's personal honor, but any engineer found performing unethically may have his license revoked thereby divorcing him from his chosen means of livelihood. When all professional engineers become registered and compliance to the state registration laws is 100 per cent, the public will get what they pay for in quality, the project will perform the function for which it is designed and the safety of the project will be beyond question.

Engineering as a profession is quite young and its progress toward recognition as a true profession has been slow. The greatest step forward was made when the present registration laws were passed in the various state legislatures. Since the passage of these laws, not enough significance has been placed on them by the public or engineers themselves. The lack of acceptance by engineers has no excuse and is almost totally responsible for the lack of professional recognition to which the engineer has become accustomed. The engineering profession is truly scientific, requiring not only as much academic study as other professions, but also a number of years of practical experience. The engineer must realize that he is as professional as a doctor, lawyer, dentist, or any other group which now enjoys total professional recognition. He should consider it his personal duty to follow his career and when he feels that he is qualified for registration he should apply.

Not only does the engineer owe it to the public and his profession to become registered but he owes it to his family and himself. By helping the public to obtain more for their money he will raise his own standard of living. As professional recognition is gained his social standard will be raised and the term "professional engineer" will take on more meaning to the public than Draftsman, Railroad Engineer or Operating Engineer.

In conclusion, all members of the engineering profession are urged to take the following three steps:

1. To apply for registration as soon as the qualifications can be met.
2. To comply with all of the registration laws and the engineer's "Code of Ethics."
3. To report to the proper authorities any person or group of persons who are not complying with the registration laws. . .

Milwaukee

(*Continued from page* 37)

safeguard Milwaukee's drinking water supply. Epidemic after epidemic took their toll of human lives before eventually in 1939 a modern water purification plant was finally placed in operation. Fluoridation was inaugurated in 1953. Now Milwaukee's drinking water meets most exacting requirements for purity.

Expressways are now under construction to serve the needs of the growing city. Shopping centers are springing up on the outskirts, focusing attention on the opportunities for growth in the open areas surrounding the present built-up portion of the city.

RELIABLE electric power service is provided by the Wisconsin Electric Power Company. Several large steam power plants provide a total generating capacity of 600,000 kilowatts, and the Oak Creek steam power plant now under construction on the lake shore twelve miles south of the city will double existing capacity. Rates for power are among the lowest in the nation.

Milwaukee city and county engineers are proud of their parks and playgrounds. You'll find excellent picnic grounds, golf courses, beaches, and swimming pools.

The latest of Milwaukee's engineering feats is the new County Stadium, seating over 35,000 and, of course, a pennant-contending ball team.

While you are here, you'll have a chance to see our Milwaukee Braves play Philadelphia. Reservations will have to be made far in advance since seats are sold out long before the game. Yes, Milwaukee and Wisconsin are really sold on the Braves. You will be too!—*End.*

---NEW PROCESSES---

Glass Cloth For Reproductions

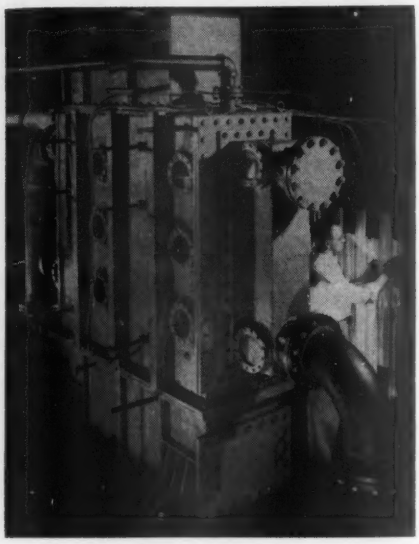
The versatile family of plastics born of Polyester resins reinforced with glass fiber has given engineering departments of many industries a photo-template material which is said to be revolutionizing drafting and reproduction procedures, and sharply cutting their costs.

Use of this material has spread to mapping, tooling, lofting, plane table surveying—wherever, in fact, dimensional stability must be maintained in originals, master duplicates and true-to-scale reproductions. In the aircraft industry with its constant use of huge templates, applications verge on the spectacular. A 4 x 12-foot reproduction formerly made on painted metal surfaces now requires merely a roll of the new material no bulkier than a window shade, doing away with problems of bulk, weight, shipping and storage, not to mention the saving of sometimes critical metal.

The new template material, developed by True-Scale Engineering Supply Co. of Wichita, Kansas, is made by impregnating cloth woven from continuous glass fibers with a blend of Paraplex polyester resins. The result is a sheet material said to have dimensional stability equal to or better than that of the metal it replaces, but with transparency greater than that of tracing paper.

A polyester glass cloth template can be copied on a relatively inexpensive contact printing table in which vacuum holds the original firmly against the copy. Silver emulsions, Diazo or any of the usual sensitizing materials may be used. Drawings made on metal plates can be copied rapidly on the sensitized glass cloth by reflex printing.

Processed by Swedlow Plastics Co. of Youngstown, Ohio, with resins developed by Rohm & Haas Co., this material is made in widths up to 60 inches in cut sheets or in 100-yards or longer rolls. Furnished normally in 5½-mil thickness but available in thicknesses down to two mils, it is distributed by leading drafting supply houses.



Experimental surface type steam condenser.

Test Condenser Studies Design Problems

An experimental surface type steam condenser has been built by Allis-Chalmers Manufacturing Company to accumulate heat transfer data which are expected to lead to improved commercial design.

Outwardly of unconventional design, the unit's interior represents a typical section of tubes taken from a full size condenser of the type and design produced by Allis-Chalmers.

The model has been designed to permit it to be adapted to various tube and baffle arrangements as well as different tube sizes and materials. Through the use of a removable type tube bundle, tests can be run which will allow the investigation of the heat transfer characteristics of a series of varied tube configurations.

The initial tests will use 280 ⅝-inch diameter tubes to give a total effective surface area of 276 square feet. The surface available in this condenser will then vary as different size tubes and tube configurations are used.

It is believed to be the first time that studies on condenser tube spacing and laning, tube vibration, pressure drop through the steam space, and baffling arrangements have been made on this scale.

Colloidal Graphit For "Atomic Battery

An "atomic battery," a new refin ment of our atomic society, has no been developed by the Ohmart Co poration of Cincinnati, Ohio. This d vice, possessing far-reaching pote tialities in industry and home, is a ready perfected to a point where delivers a small current for almost a indefinite period of time—is said to b enough to run a very small electri motor for possibly 20,000 years. Th discovery is based upon a method o converting radioactive energy direc ly into electrical energy through th application of a theory which make use of a gas as an electrolyte afte ionizing it by exposure to nuclea radiation.

Primarily a metrological tool at thi stage of its development, the "atomi battery" plays an important part in th manufacture of new instruments fo precise measurement of radioactivity It can also be used to measure liqui levels, liquid interfaces, specific grav ity, temperature, viscosity, pressure and vacuum. Further possibilities much different, exist for such func tions as measurements of corrosio rates and analyses of alloys and gasses

Great potentials for the atomic ba tery are visualized for the near future Fractional H. P. motors, electric equipment, and instruments may b freed of dependence on power distri bution lines and wiring. The new visi is for electrical apparatus—complet with a built-in energy source.

After initial work with lead and gol as electrodes, "Aquadag," a dispersio of colloidal graphite in water, mad by Acheson Colloids Company, Po Huron, Michigan, was found to b more suitable as the positive electrod because graphite is beyond gold o the electromotive series. Other form of carbon were tested but the highes positive potential for this type of elec trode is produced by the colloida graphite.

The Ohmart cell makes possible battery for use where only a trade c current is needed. This "atomic ba tery" marks the first new method fo making electricity in approximatel fifty years. It is the fifth practica means for producing current, th others being the generator, the elec trolytic cell, the thermocouple, th Kelvin-Null method of contact-poten tial measurement ("contact differenc of potential"), and the Ohmart cell

Dry Chemical For Fire Prevention

Cutting oily steel plates can be hazardous because flames from the cutting torch often heat the oil deposits to ignition temperature quickly, causing fires. One way to avoid such fires, say engineers of the Ansul Chemical Co. of Marinette, Wis., producer of dry chemical fire equipment, is to spread a thin layer of dry chemical over the area to be cut.

Strictly Business

Personalities . . . VAN W. ROSENDAHL has joined the ROSENDAHL CORPORATION, California engineering constructors with offices in San Francisco and Los Angeles, as chairman of the board, according to an announcement by MILTON O. ROSENDAHL, president. . . . JOHN S. REARICK has been appointed manager of engineering for THE C. W. NOFSINGER COMPANY, Engineers and Contractors of Kansas City, Mo. . . . ALFRED L. HARTRIDGE and STUART F. KOSTERS have been elected vice presidents, and THOMAS W. BARRY appointed an assistant treasurer of STONE & WEBSTER ENGINEERING CORP., New York and Boston. . . . PHELPS WALKER has been appointed works manager of the Janesville and Menomonie, Wis., plants of the PARKER PEN CO. . . . SAM I. ROUDEBUSH of Barberton, O., has been named resident manager of a new tire manufacturing plant being built in Bogota, Colombia, by SIEBERLING RUBBER CO. and a group of Colombian investors. . . . WALTER A. WECKER president and director of the MARQUETTE CEMENT MANUFACTURING COMPANY, has been elected to membership on the board of directors of POOR & COMPANY, Chicago, Ill.

Mr. Rosendahl

ROBERT F. SEARLE has been elected a vice president in charge of production and engineering of ARKELL & SMITHS' plants at Canajoharie, N. Y., Wellsburg, W. Va., and Mobile, Ala. His headquarters will be at Canajoharie. . . . H. R. POWERS has been named general manager of the KOEHRING COMPANY OF CALIFORNIA in Stockton. . . . HORRALL HARRINGTON has been appointed sales engineer for the Midwest District by the BLAW-KNOX COMPANY, Chemical Plants Division. He will be located at the firm's Chicago office. . . . ALBERT A. BAKER has been named executive assistant at the J. A. ZURN MANUFACTURING CO., Erie, Pa., and JOHN L. DERBY has been appointed plant manager with the same firm. . . . GEORGE DAVIS and LOWELL CONRAD have been appointed chief engineers of the Construction Machinery Division, CLARK EQUIPMENT COMPANY, Michigan manufacturing firm. Mr. Davis will handle the power shovel line, and Mr. Conrad, the new tractor shovel line. . . . ALBERT H. LEADER is the new district manager for the Seattle office of ANACONDA WIRE & CABLE CO. . . .SOILTEST, INC., Chicago, has announced the appointment of M. D. MORRIS of New York City as the firm's eastern representative.

GEORGE L. WIRTZ, chairman of the board, THE ATLAS MINERAL PRODUCTS COMPANY, Mertztown, Pa., and Houston, Tex., has announced the appointment of DR. RAYMOND B. SEYMOUR as president of the company. . . . JEROME BEEN has been promoted from the position of technical director to that of vice president of the RUBBER & ASBESTOS CORP., Bloomfield, N. J. . . . WALTER LAMB has been elected president of ROBERT E. LAMB & SON, INC., Philadelphia construction firm, succeeding his father, ROBERT E. LAMB, who has been named chairman of the board. MORGAN C. RULON has been elected executive vice president of the firm, and EDWARD I. TROIANI has been appointed to the newly-created position of general superintendent in charge of all field personnel and operations. . . . WILLIAM B. HALL has been named general manager of VITRO URANIUM COMPANY, Salt Lake City, Utah, a division of VITRO CORPORATION OF AMERICA. . . . The LINK- BELT COMPANY of Chicago has announced the appointments of HARRY G. ANDERSEN as district manager of its Newark, N. J., office, and JOHN D. RILEY as district manager of its Cleveland, O., office. . . . JAMES O. JOHNSON has been named general sales manager of BUCHANAN ELECTRICAL PRODUCTS CORPORATION, Hillside, N. J.

Operational Expansion . . . Expansion of facilities at the Mobile, Ala., Alumina Works of the ALUMINUM COMPANY OF AMERICA was completed as of March 1, according to an announcement by DUNCAN C. SMITH, works manager. Capacity of the plant, now the largest alumina plant in the United States, was increased by 33 per cent during the expansion program. . . . CLARK EQUIPMENT COMPANY, manufacturers of industrial materials handling trucks, construction equipment, and heavy automotive components, has announced plans to erect a new plant on the outskirts of Benton Harbor, Michigan. . . . AMERICAN CAN COMPANY has announced the breaking of ground on a 40-acre tract of land in Barrington, Ill., for the building of its new Research and Development Center. Construction has also started on a new Canco factory in Denver; the latter facility is being built by CABOT, CABOT AND FORBES, INC., Boston industrial development firm, and will be leased by AMERICAN CAN under a long-term arrangement.

New Firms and Offices . . . The R. M. REICHL COMPANY, with offices at 110-11 Seventieth Rd., Forest Hills, L. I., New York, has been established by R. M. REICHL, formerly vice president of HYDROPRESS, INC. The new firm will specialize in development engineering, process development, and consulting. . . . HARRY L. TOOKER has entered private engineering practice under the firm name of THE TOOKER ENGINEERING COMPANY, Consulting Engineers. The new company, with offices at 515 West 11th St., Houston, Tex., will work in the fields of architectural, civil, structural, and consulting engineering. . . . BEN A. LEPPARD has announced the opening of an office at 3 West Plaza, Greenville, S. C., to provide an air conditioning consulting service. . . . THE WARNER & SWASEY COMPANY, Cleveland, O., has purchased the business and assets of the INDUSTRIAL SCIENTIFIC COMPANY, New York City, and the formation of THE WARNER & SWASEY RESEARCH CORPORATION to carry on, in expanded form, the work of the former company.

Mr. Reichl

Industrial Exhibitions . . . The second BASIC MATERIALS EXPOSITION, the product development show which had its premiere in New York last June, will be held at the International Amphitheatre, Chicago, May 17-20, according to CLAPP & POLIAK, INC., of New York, founders and producers of the exhibition. . . . The CALIFORNIA SOCIETY OF PROFESSIONAL ENGINEERS TRADE SHOW will be held May 27-29 in conjunction with the Society's 1954 convention in San Francisco.

What's New

AMERICAN ENGINEER April, 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 1 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

GEM DIAL INDICATOR — Item 1

An extremely rugged, sensitive, smooth operating dial indicator is being made available by the Hairspring Vibrating Co. Known as the Gem Dial Indicator #222 it is designed to give a great range of adaptability. Indicators are furnished with #9 standard contact points and adjustable and removable ball shank. Special contact points #10 and #30 allow for readings in small and difficult places. #10 contact points are available in special sizes on request. Adaptable for use on nearly every type of machine.

AMERICAN ENGINEER April, 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 2 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

NEW EFFECTS IN WALL PAINT — Item 2

In a startling new paint development by Sherwin-Williams Company, aluminum is being used as the principal ingredient in a many-colored assortment of interior wall coatings, called Opal-Glo. The aluminum in the new product, manufactured by Aluminum Company of America to Sherwin-Williams' rigid requirements, provides thousands of minute "mirrors" that reflect light through the opalescent colored pigments to bring out the full quality of their hue. Properties of this unusual wall paint are a 50% reflectivity of light, good durability.

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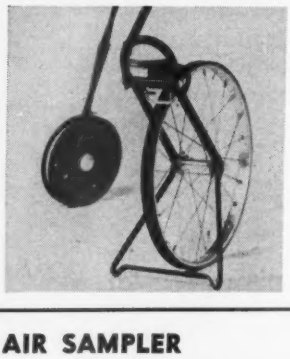
Please send information on Item 3 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

IMPROVED CALIBRATED WHEELS — Item 3



A new series of improved calibrated wheels, tradenamed Distometer, and providing high speed, accurate methods of measurement for all types of industry, has been recently perfected by Rolatape, Inc. They permit measuring wall to wall, around corners, around curves and contours easily and accurately and can be used for horizontal, vertical, lateral or diagonal measuring. Total distance is recorded in feet and inches on easy to read linearity counter and recessed scale on wheel circumference.

AMERICAN ENGINEER April, 1954
1121 FIFTEENTH ST., N.W., WASHINGTON 5, D. C.

Please send information on Item 4 to:

Name .....
(Title)
Company .....
Street .....
City and Zone ..... State.....

AIR SAMPLER — Item 4

An air sampler instrument has been devised by Joseph B. Ficklen 3rd of Pasadena, Calif. which provides all that is necessary to conduct economical air sampling for the many dusts, gases and vapors encountered in industry. The device causes air or other gas to be drawn at a constant rate through scrubbers containing solutions for the absorption of the air or gas contaminant to be determined. It is designed to collect air-borne material in conjunction with indoor industrial health investigations and outdoor air pollution studies. Simple to operate on 6 volt storage battery or 110 volt-60 cycle current. Compact, portable.

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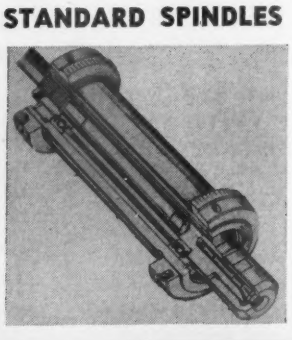
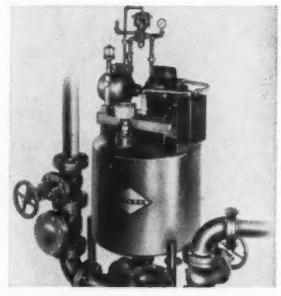
STANDARD SPINDLES — Item 5



A new line of mass-produced standard spindle assemblies which can be used to simplify designing and manufacture of special machines is announced by Russel T. Gilman, Inc. Saves designing and manufacturing time; available to fit #0 or #1 Morse taper shanks, or ⅛ in., 3/16 in. or ¼ in. maximum capacity collets. Drills, reamers, taps, end mills and other tools of similar size can be accommodated.

This column describes new products of general interest to professional engineers. For further information, fill in the coupon provided and mail to the AMERICAN ENGINEER.

PNEUMATIC SEWAGE EJECTOR — *Item 6*



Yeomans Brothers Company has just announced PACKEX—a packaged pneumatic ejector for low flows. PACKEX is designed especially for small building and subdivision lift stations, such as small apartment buildings, offices, small schools, trailer parks, and small residential areas having capacities to 20 gpm with a 20 ft. head. Used with either a 3 inch or 4 inch inlet and discharge fitting PACKEX has an hermetically sealed pot to eliminate odor and gas, no bearings in pumping unit to wear, no stuffing boxes to repack, and no shafting to keep aligned.

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EXTRUDED INTERNAL FIN TUBING — *Item 7*

Of particular interest to design engineers associated with unusual problems of heat transfer is tubing with integral fins on the inside surface. Such tubing has been produced by the Tubular Products Division of The Babcock & Wilcox Company. With fins on the inside or outside of tubing the surface area is greatly increased thus permitting a greater transfer of heat in a tube of a given length and diameter. The finned tubing was produced of a special heat resisting stainless steel. Additional information on special tubular shapes produced by Extrusion is available upon request.

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ELECTRONIC TIME SYSTEM — *Item 8*

Compensation for prolonged power interruptions due to electrical storms, shutdowns for maintenance and repairs, and other unavoidable occurrences is provided with IBM's new 12-hour Self-regulating Electronic Time System. This new system's extended range of correction is provided twice each day for all indicating clocks, making it possible to correct automatically clocks with time lags of as much as 11 hours, 59 minutes and 5 seconds. Existing installations of IBM Self-regulating Electronic or Synchronous-Wired Systems can be expanded to full 12-hour correction.

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NEW SKID-PROOF FLOOR COATING — *Item 9*

NeoFloor is a new, easily applied skid-proof, corrosion resistant surface coating developed by the Pennsylvania Salt Manufacturing Co., for concrete, wood and metal floors where oils, greases and chemicals create safety hazards and maintenance problems. It is a grit-like material anchored in a matrix of resilient neoprene and bonded firmly to the floor with an adhesive primer. Both primer and coating are supplied in liquid form for easy, quick-drying application with brush or roller. NeoFloor is highly resistant to fumes, spillage from acids, alkalies, salt solutions and solvents at temperatures up to 220° F. Also waterproof, it is easily cleaned with commercial detergents and cleaners.

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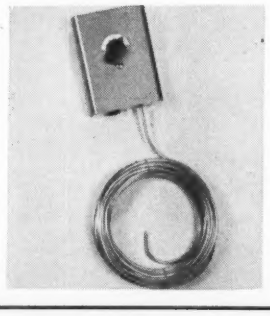
HEATING REGULATOR FOR SMALL HOMES — *Item 10*



Constant comfort, by changing indoor temperatures as outdoor temperatures change, and the steady, smooth flow of heat that equalizes warmth from floor to ceiling are features of the new 3-Way Weather-Flo "small home" heating regulator announced by Automatic Devices Co. Both outdoor and house temperatures are measured and the burner is operated so that the temperature is raised only enough to offset the resultant heat loss. Works equally well on gravity or forced flow, on warm air or hot water heating systems. It requires only about one hour to install.

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